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Creating a Positive Command Climate: New Roles for Leaders

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87-05

Creating a Positive Command Climate: New Roles for Leaders

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The question of the linkages between an organization's "climate" and the attitudes and performance of its workers is an interesting and multi-faceted one. In fact, a theme frequently pursued in recent books on leadership in organizations (Deal and Kennedy, 1982; Ouchi, 1981; Peters and Waterman, 1982; Peters and Austin, 1985) is the nature of the relationship between values, leadership styles, work climates, and organizational outcomes. Recent research such as this in the corporate world (Lawler, Hall, and Oldham, 1974) which "has shown that an organization's climate can influence both the job performance and the satisfaction of its employees" (Muchinsky, 1983: 294), leads us to ask: would we arrive at a similar conclusion about the effects of organizational climate if we examined a military environment?

This paper explores that particular research question by analyzing data on perceived declines in soldier values and their relationship to organizational environment or climate "causes." It then focuses specifically on the issue of climate and leadership style in two military case studies: the U.S. Air Force Tactical Air Command and the III Corps of the U.S. Army. The paper concludes by examining the question: if new methods and leadership styles can apparently produce effective results within military organizations, why aren't they adopted more frequently?

Some Initial Theoretical Considerations

Before turning to our research data however, some initial theoretical grounding is in order. The concept of "organizational climate" is a difficult one to pin down for at least three reasons. First there is the problem of definition. "Organizational climate" is often described as something that is sensed rather than something that is recognized cognitively. Also, this term is frequently used simply without definition, as though its meaning were inherently understood and shared by both writer and audience.

Some scientific definitions of organizational climate are inclusive, yet complex, such as that of Hellriegel and Slocum (1974: 256) who

define climate as "a set of attributes which can be perceived about a particular organization and/or its subsystems, and that may be induced from the way the organization and/or its subsystems deal with their members and environments," or that of Muchinsky (1983: 436) who states that "organizational climate is the combined perceptions of individuals that are useful in differentiating organizations according to their procedures and practices." In a military context, the meaning and use of the term "organizational climate" seems to focus on its nebulous nature and its greater access to intuitive than to analytical assessment. Malone notes, for example, that "in practical terms, 'climate' is the sum total of what an experienced soldier feels or senses when he goes into a new unit, listens and looks around awhile, and then judges whether the unit is worth a damn, can do its job, and will take care of its people." (Malone, 1985: 9. *Italics added.*)

This definition of organizational climate in a military context illustrates another critical area of specific concern: the problem of measurement. How can such an amorphous concept as "organizational climate" be assessed empirically and what kinds of measurement tools can we use? Payne and Pugh (1976: 1142-1145) suggest the use of both subjective or "perceptual" measures of organizational climate such as Litwin and Stringer's Organizational Climate Questionnaire (1968) and Stern's Organizational Climate Index (1970), and the use of objective measures such as Barker's (1963) behavioral episodes (descriptive, observational data) and the use of critical incident information, such as job turnover, absenteeism, and lateness statistics.

Related to definition and measurement issues is a third area of theoretical concern with the notion of "organizational climate": its lack of conceptual clarity. Two major issues here are: 1) identifying what constitutes it (describing its elements or components) and 2) the difficulty of separating "organizational climate" from other, related concepts such as "organizational structure," "morale," and "job satisfaction". Both of these issues continue to be raised as areas of research concern and interest today, despite the significant progress that has been made in our understanding of them. For purposes of this paper, it is useful to note Hall and Schneider's (1973: 12) description of four basic features of organizational climate identified in past research: "(1) leadership or supervisory style, (2) interpersonal relationships, (3) intrinsic meaning in work, and (4) extrinsic reward characteristics." And, on the issue of separating "organizational climate" from other, related variables, especially that of "organizational structure," Likert's distinction between causal, intervening, and end result variables is instructive:

The "causal variables" are independent variables which determine the course of development within an organization and the results achieved by the organization. These causal variables include only those independent variables which can be altered or changed by the organization and its management....Causal variables include the structure of the organization and management's policies, decisions, business and leadership strategies, skills, and behavior.

The "intervening" variables reflect the internal state and health of the organization, e.g., the loyalties, attitudes, motivations, performance goals, and perceptions of all members and their collective capacity for effective interaction, communication and decision making.

The "end result" variables are the dependent variables which reflect the achievements of the organization, such as its productivity.... (Likert, 1967: 26)

All three of these underlying theoretical concerns - definition, measurement, and conceptual clarity - raise issues to which we shall return as we now focus specifically on an examination of some of the effects of "organizational climate" within a military setting.¹

Climate and Values

Let us first examine the relationship between organizational climate and values. During the 1986 theme year of "Values," the U.S. Army Research Institute administered a questionnaire to 5737 soldiers and Army civilians at ten installations in the United States and to 2186 soldiers and civilians at seventeen locations in Germany. The survey's purpose was to identify those values which respondents felt were important to them. The survey pointed to the possibility (supported in other research findings, e.g., Glickman, 1961) that soldier values may decline after initial training when a soldier is first assigned to a unit. (Siebold and Tremble, 1986) During subsequent personal interviews with soldiers, an attempt was made to understand some of the possible reasons for this. Seventy-three soldiers from eight combat companies stationed in Germany were asked: "Have you noticed such a decline (in core soldier values) in your peers in your unit?" or "Have you noticed this decline (in core soldier values) in the first-termers you lead?" Then all respondents were asked, "Based on your experience, why does this decline happen?"

Most of those interviewed indicated that they had indeed noticed such a decline in first-termers soldier values. (Devilbiss and Siebold, 1987)

When asked why they thought this had occurred, respondents gave a variety of reasons. A content analysis of the replies to this question revealed the following major themes:

Enlisted soldiers felt that this decline was a result of 1) characteristics of the unit itself or 2) attributes of the individual soldier. Most of them focused on the former (external) causes for value decline in their peers, citing reasons which can be categorized as "unit environmental characteristics" or "tone" in a unit; far fewer thought that the individual soldier himself was the reason. The "unit environmental characteristics" category included references to reasons such as "nitpicky things," "extra things that are not MOS related", and "they tell you something and something else comes down," while the unit "tone" reasons cited were, for example, "they never hear your problems," "they don't take care of your family over here," and "your leaders make you feel as if you're not a man [do not let you think for yourself]."

Most unit leaders (NCOs and officers) also felt that there was evidence of a decline in soldier values in first-termers in their units. Like unit soldiers, NCOs and officers often cited "unit environment" and "unit tone" explanations. Regarding "unit environment," NCOs referred to such things as "nitpicky stuff," "monotony and repetitiveness of everyday things," "interruptions," and "so much field and post duty that you can't plan your personal life," while officers cited such reasons as "a brainwashed mode to a less supervised environment" and "extra details." Regarding "unit tone," NCOs gave responses such as "troops see leaders not doing things the way they should be done," and "the key is the section sergeant - does he take care of his [soldiers'] needs," while officers offered explanations like "the very essence of being a soldier in their eyes is being breached by those who are over them," and "[there is a] need to show new guys the right way, to nip problems in the bud."

But NCOs and officers also emphasized other reasons for a decline in soldier values in first-term soldiers: the interaction between the environment and the soldier which might produce a decline in soldier values ("attitudes" - especially negative ones - were said to "rub off"), the possible disjuncture between expectations and realizations that might occur when a soldier went to a first duty assignment in an operational unit, and the unique problems that an European duty assignment might present to a new soldier (e.g., the different customs and laws in the host country, the stress or intensity of duty in an overseas environment, etc.) A summary of the reasons for perceived value decline in first-term soldiers appears in Table 1.

TABLE 1. REASONS CITED FOR VALUE DECLINE IN UNIT SOLDIERS

	Enlisted(N=25)	NCOs(N=32)	Officers(N=16)	Total
Unit structure (1)	0	2	1	3
Unit environment (2)	7	12	4	23
Unit "tone" (3)	5	5	3	13
Interaction of environment, individual (4)	1	3	2	6
The leadership (5)	1	5	1	7
The soldier (6)	6	9	1	16
Expectations/reality(7)	4	7	3	14
Being in Europe (8)	0	3	1	4
Other	1	1	1	3
Total	25	47	17	89

(1) number of NCOs, availability of promotions, etc. (2) events or circumstances in a unit, (3) perceived psychological climate in a unit, (4) attitudes of others "rubbing off," (5) characteristics of specific leaders or a general mention of "the leadership," (6) characteristics of specific soldiers or soldiers "in general," (7) disjuncture between expectations and realizations, (8) unique characteristics of a European assignment.

Note: Totals may not correspond to the number of respondents since some individuals cited several reasons (responses were multi-coded) and others did not cite any reasons (responses were coded "no answer")

These data indicate that soldiers and leaders alike saw "unit environment" and "tone" in the unit as major factors contributing to a decline in core soldier values among first-termers. Results such as these bring the issue raised earlier about conceptual clarity into sharper focus. A strong case could be made, for example, for what are designated here as a) unit environment, (events or circumstances in the unit), b) unit tone (perceived psychological climate in a unit), and even c) interaction of the environment and the individual (especially as it is defined here as attitudes of those in the unit "rubbing off" on others) as all being elements or components of a unit's "organizational climate".² This is important because, taken together, these items account for 42 out of 89, or 47%, of all responses to the question, "based on your experience, why does this decline (in core

soldier values among first-termers) happen?"

This raises another intriguing question: how does "organizational climate" come about, and specifically, what part do leaders play in its evolution? This question will be pursued in the next section where we examine the relationship between organizational climate and leadership style within a military setting.

Climate and Leadership Style

How does a leader or supervisor actually set a "tone" in a working environment? In answering this question, we must look at the concept of leadership style. The way in which a leader or supervisor uses power and influence to accomplish the organization's goals may be called his or her "leadership style". Research has identified "leadership or supervisory style" as one of the four basic features of organizational climate in corporate settings. (Hall and Schneider, 1973: 12) In the military too, efforts have been made to look at leadership - its antecedents, and its consequences - in new and different ways. And, with a high level base of support, some new leadership styles and techniques have been tried and evaluated. Two examples of this are General W. L. Creech's dramatic turnaround of the Tactical Air Command from 1978 to 1984 and Lieutenant General Walter F. Ulmer, Jr.'s implementation of Human and Leadership Goals in the U.S. Army III Corps at Fort Hood, Texas, beginning in 1982. These two examples are of particular interest because they provide excellent case studies of how innovative leadership styles and techniques can be successfully implemented to produce positive results. Let's examine how this was done in each of these cases.

Case Study: The Tactical Air Command

In 1978 when General W. L. (Bill) Creech took over as Commander of the U.S. Air Force's Tactical Air Command (TAC), this 115,000 full-time, 65,000 part-time member force at 150 installations around the globe - responsible for more than \$40 billion worth of assets including an inventory of 3,800 aircraft - was in a state of virtual disarray.

"At any one time, half of the planes ... were not battle ready and more than 220 airplanes were ... grounded at least three weeks for lack of spare parts or maintenance. Because of equipment problems, TAC pilots - trained at a cost of \$1 million each - lacked the flying time necessary to keep their skills sharp, and the best of them were deserting the Air Force in droves. So too were mechanics and

technicians....Perhaps worst of all was the soaring accident rate that resulted in tragic deaths, unnecessary loss of expensive airplanes, and embarrassment for the service." (Finegan, 1987: 42)

In just six and a half years, General Creech turned this situation around. Today, the difference in readiness is dramatic: TAC fighter aircraft "are in superb condition, its pilots fully trained, its installations sparkling. The number of (maintenance-grounded aircraft) has declined from 200 to just a handful. Reenlistment rates are way up. And a dramatic reduction in the crash rate has saved dozens of lives and billions of dollars' worth of airplanes." (Finegan, 1987: 42) Perhaps most spectacularly, General Creech did all of this with "(1) no more people, (2) no positive change in weapon systems mix (i.e., no easier to maintain planes), (3) fewer parts available, and (4) a work force with less experience than had been available, on average, during the previous ten years". (Peters and Austin, 1985: 279)

How did General Creech do all of this? He started by simply allowing himself to think in a different way. Creech had served in the Pentagon when Robert S. McNamara was Secretary of Defense. McNamara, a former president of the Ford Motor Company, had emphasized the importance of centralization of structure and decision-making. In so doing, he was in keeping with the management philosophies of the time which equated centralization with increased efficiency.

In 1978 however, General Creech saw that this centralized model of leadership and management for his organization, which had worked well in the past, was no longer the effective model it once had been. He felt that the Air Force, like many other organizations in the United States, "had been ill-served by the 'centralization/consolidation disease of the 1960's,' which he call[ed] 'dehumanizing.'" (Creech, as quoted in Peters and Austin, 1985: 278) To deal with this, Creech felt, would require his shift in focus "from the highly centralized and specialized (input-driven) structure he inherited to an output-focused organization". (Peters and Austin, 1985: 279) He thus proposed a new leadership model for TAC and it was "nothing less than a radical restructuring of his command, one that would send authority down the ranks along with responsibility for meeting clear and simple goals." (Finegan, 1987: 44)

His plan immediately met with opposition - from Pentagon planners down to senior sergeants. However, Air Force Chief of Staff General David C. Jones was sympathetic to Creech's idea early on, and while this did not guarantee success for the plan, it did permit the latitude to carry it out. General Creech's decentralization plan was on.

He began by focusing on his "bottom line" or "product": the TAC aircraft and the people responsible for them. He then helped to instill pride, enthusiasm, and a sense of ownership or psychological investment in these people for their "product" - the airplane and its ability to

get in the air and complete a sortie (i.e., perform its mission). He accomplished this by actions which provided visible support for his philosophy: he treated people at all levels in his command as if their needs were important and their working conditions were crucial to the success of their unit's "product".

To accomplish this, General Creech took several initiatives: he restructured his command around the squadron (24 aircraft) rather than the wing (three times as large); he created squadron repair teams made up of technicians from different kinds of maintenance specialities; he moved both commonly used aircraft repair parts and the aircraft maintenance workers themselves away from centralized warehouses and offices down to the flight line where the planes were; and he assigned each squadron certain aircraft for which that squadron's crew chiefs and other maintenance workers would be directly responsible. A change of attitude rapidly began to appear. Squadron colors and crew chiefs' names were painted on the aircraft, just as the pilots' names were. People began to come in on their days off to check on and spruce up the planes. The pilots began to notice a change in the maintenance workers' attitudes and, since the aircraft were now in better shape and thus more reliable, pilots' attitudes began to change for the better, too. (Finegan, 1987: 44, 46) For virtually everyone, "excellence became an obsession". (Finegan, 1987: 46) The overall tone of the organization had begun to change.

"TAC's new spirit was soon reflected in the statistics." (Finegan, 1987: 46) In just one year, mission performance (the sortie rate) increased 11%, the average aircraft was in the air 24 instead of 17 hours per month, and the aircraft rated as mission capable increased from 50% to 60%. (Finegan, 1987: 46) General Creech did not stop here, however. He instituted more decentralization reforms like giving squadron commanders a sortie goal (previously this had been done at the level of wing headquarters) and then leaving them free to design their own flying schedules. "And they were given some added incentive to meet their targets: if a squadron met its monthly goal early, Creech decreed, then the entire squadron, from pilots to maintenance techs, could take an extra three-day weekend....[This] incentive plan worked splendidly. Virtually every squadron in TAC now averages 10 extra three-day weekends a year." (Finegan, 1987: 46)

Creech went on to make still other changes in the Tactical Air Command. On the philosophy that "if equipment is shabby looking, it affects your pride in your organization and your performance....you can either have a climate of professionalism or one of deterioration and decay" (Creech, as quoted in Finegan, 1987: 48), fresh paint, murals and lounges with comfortable furniture in flight line areas, and barracks with carpeted rooms and semi-private baths appeared on TAC installations. Reflecting this pride in equipment and people, annual

awards banquets and trophies were instituted at every wing in order to recognize the year's best maintenance and supply specialists. (Finegan, 1987: 48)

An article entitled "Four-Star Management" summarizes some of the key assumptions of Creech's approach. These are: "(1) workers are more professional when provided with a professional environment; (2) workers take more responsibility when they have a sense of ownership; (3) management control is established through motivation not regulation; (and 4) consolidation and centralization can lower output as well as costs." (Finegan, 1987: 44)

Several of General Creech's basic watchwords - motivation, delegation, employee ownership, professionalism, pride, enthusiasm, and excellence - were in keeping with the emerging management theories of the 1980's which stressed these principles in a context called "power down" (decentralization plus accountability). These ideas were also used effectively by Lieutenant General Walter F. Ulmer, Jr. in his innovative approach to implementing Human and Leadership Goals in the U.S. Army III Corps at Fort Hood, Texas.

Case Study: The III Corps

Like General Creech, who "wanted his 'supervisors to train as wartime leaders'" and whose motto was "organize as you will fight," (Creech, as quoted in Peters and Austin, 1985: 279), General Ulmer's purpose in implementing the Human Goal and the Leadership Goal in the III Corps was "to create a command climate that would produce and support a force ready to go to war quickly and effectively" (CATA, 1986: 1), that is, "one that would foster and develop the kind of bold, dynamic, risk-taking leader needed on the AirLand Battlefield". (CATA, 1986: 1) General Ulmer's "bottom line" or "product" focus was thus not an object (an aircraft and its sortie rate), but rather the individual leaders and soldiers themselves.

In order to turn out an effective "product" (to "grow" effective leaders and soldiers), Ulmer, like Creech, advocated a decentralized organizational philosophy. He concentrated on a "power down" approach which would delegate both responsibility and authority to the lowest possible level and, at the same time, make accountability a vital part of that responsibility and authority. General Ulmer articulated these basic foundations and assumptions of his approach in a November, 1983 report to Headquarters, Department of the Army entitled "Report on Implementing Human and Leadership Goals."

One of the key features of General Ulmer's implementation of these goals at Fort Hood was the III Corps Commander's Handbook, or "Greenbook," first published in January, 1983. (CATA, 1986: 6) Described as a reference book for all commanders and civilian

supervisors, the "Greenbook" had copies of many policy directives and also contained many descriptive "tips" for leaders. The purpose, as well as one of the results of the "Greenbook," was "keeping priorities, goals, and objectives constantly in focus throughout the command". (CATA, 1986:7)

To achieve this purpose, General Ulmer concentrated on shaping a command climate which was "routinely supportive, set clear priorities and standards, demonstrate[d]...trust [in] leaders to do their job and allow[ed] them to concentrate on the priorities." (Ulmer, 1983: 1-1) It was this kind of command climate, according to Ulmer, that would be the means of developing subordinate leaders and of increasing their effectiveness and productivity. Such a command climate would stress:

(1) a sense of trust and of mutual respect, 2) a philosophy backed by both words and actions (organizational consistency), 3) a simplification of organizational processes (cutting down on red tape), 4) a reduction of dysfunctional garrison and combat stress (trying to eliminate an atmosphere of confusion and frustration by providing a more predictable and more 'aware' or 'need-conscious' environment), 5) an emphasis on a work and living environment that "would allow soldiers and their families to more fully realize their potential" (this included "leader development...[through] professional education, delegation of authority commensurate with responsibility and learning by doing with a tolerance for mistakes" as well as more emphasis on the repair and replacement of physical facilities in the soldier's living and working environments), 6) the adoption of an integrated approach to health and physical fitness which focused on new programs designed to address the nutritional, physical, and mental fitness of soldiers, and 7) a consideration for the needs and expectations of the soldiers' families and a wider perspective on the total living/working environment, which included the surrounding local community. (CATA, 1986: 8-11. Quotations are from p. 10)

Some specific steps taken to achieve these goals included the following initiatives: local regulations were reviewed to see if any could be revised or eliminated; professional education and development courses were offered along with personal enrichment classes such as stress reduction, weight reduction, and physical fitness); seven day's advance notice for roster duties, course attendance, etc. was required so soldiers and their families could plan ahead for these contingencies; buildings were repaired and new construction was begun; newcomers briefings were conducted at all levels of command and included spouses; "family days" were held to let family members know about social, service, and community activities; and key community leaders became involved in working out solutions to sub-standard

off-post housing. (CATA, 1986: 9-11)

But did this process actually work, that is, were the Human and Leadership Goals achieved in this kind of decentralized environment? In this case, it is much more difficult to measure leader development, overall organizational efficiency, and morale than it is to measure a single specific factor such as an aircraft sortie rate. But as Peters and Austin (1985: 281) note: "to build a sustaining 'new' culture may ... take decades, but to get a running start - with dramatic changes in output - takes only months." (See also Ulmer, 1986: 58, 69) Follow-up interviews and questionnaires administered to officers, enlisted personnel, and civilians who had participated in the Human and Leadership Goals implementation at Fort Hood showed initial encouraging and positive results. An especially important finding, however, was that "the overall efforts at Fort Hood did indeed achieve much of the desired results, but the degree of success in the various corps components was greatly affected by each individual in the chain of leadership through whom information and power passed". (CATA, 1986: 17) This demonstrates that the initial adoption of a decentralized organizational structure itself is only part of the picture: the vital implementation tool is the eagerness or reluctance of the individuals in the organization to accept this approach and to put this philosophy into action. (The implications of this finding will be discussed in further detail below.)

Objective measures of the effectiveness of the Fort Hood program also showed up in other research findings. "In the fall of 1984, three U.S. Army graduate students in the organizational development curriculum at the Naval Postgraduate School at Monterey, Calif[ornia] did their masters' thesis research on 'Combat Units of Excellence,' focusing their efforts on battalion-size units. Two of the battalions they selected for in-depth research [were] at Fort Hood." (Malone, 1985:15) A content analysis of the responses of 100 leaders (officers and NCOs) within these two Fort Hood battalions provided many richly detailed, positive illustrations of the eight categories designated by the researchers as "attributes of combat units of excellence," namely: leadership by example; focus on combat - a shared value; power down; strong unit identity; caring with a capital c; high standards of discipline; teamwork - a way of life; and consistent excellent performance. (See extracts from these interviews in Malone, 1985: 13)

Additional supporting evidence was given in another research effort conducted by a team from the U.S. Army War College. Designed to assess "the current state of military professionalism in the Army," this survey found the stratified random sample of Fort Hood officers (N=129) significantly higher ($p < .05$) than a comparison group of Army officers (a stratified random sample of 300) on fourteen of the thirty-five professionalism factors tested. (Malone, 1985: 12) These factors were:

"being loyal to the organization, being responsible to the organization, keeping superiors and subordinates informed, encouraging ideas from subordinates, setting moral standards, giving explanations, being concerned with military appearance, subordinating personal interest, taking responsibility for one's own actions, evaluating subordinates' work, assisting subordinates, setting good examples, applying non-biased judgment, [and] assuming responsibility for property and material." (Malone, 1985: 12)³

An additional indicator of the effectiveness of the Fort Hood program was its selection as the U.S. Army Forces Command (FORSCOM) winner in the 1985 competition for the Commander-in-Chief's Award for Installation Excellence. This is particularly striking because the decision was not even made to enter the competition until very shortly before the actual deadline for the submission of the required documentation. When the competition had been announced the previous year, Fort Hood had thus "not been pointed and 'peaked' toward winning a program of inter-installation competition." (Malone, 1985: 15) Nevertheless, Fort Hood's achievements during FY 84 were numerous, including the successful fielding of 54 new tactical systems and the conduct of "over 20 percent of all Army and 50 percent of all FORSCOM new equipment field testing, including the M1 tank, remotely piloted vehicle, and multiple launch rocket system; [also of note was the reduction of] the number of soldiers performing individual installation support (special duty) missions to 187, the lowest number in Fort Hood history, culminating in 465 soldiers (the equivalent of a combat battalion) returning to their parent unit for training." (Malone, 1985: 14) Additional achievements included a 26 percent reduction in personnel fatalities over the course of the year, a "soldier hospitalization rate 35 percent lower than [the] Army average," and a total of 62,918 accident-free flight hours. (From the Fort Hood Justification Statement cited in Malone, 1985: 14)

Conclusions on Climate and Leadership Style

What conclusions can be drawn from the U.S. Air Force Tactical Air Command and the U.S. Army III Corps examples? One conclusion is that new leadership styles have been implemented with positive results in military settings, and in these instances, with positive results in two very different military settings. Another conclusion is that leadership styles can have an influence upon the climate within an organization and this may have an impact on that organization's "bottom line".⁴ Here we see illustrated the relationship that Likert (1967: 26) proposed between the causal variables (including policies, decisions, and leadership strategies), the intervening variables (including loyalties,

motivation, and performance goals) and the end result variables (such as the productivity) of an organization. We also see that, in measuring a concept such as "organizational climate," both objective and subjective data are of value: critical incident statistics tell us how the people within an organization are "voting with their feet," and perceptual data give us an in-depth awareness of how the climate of an organization is influencing people's values and attitudes.

If It Works, Why Don't We Use It?

To summarize thus far: the values interview data show us that organizational climate variables are seen by both soldiers and leaders as greatly responsible for a perceived decline in core soldier values among first-termers. The case studies of the Tactical Air Command and the III Corps demonstrate that leadership styles can influence soldier attitudes, organizational climate and results within a unit. They also show that there can be a "localized command climate quite different from the norm." (results of an Essex Corporation study cited in Ulmer, 1986: 54) With this knowledge then, we turn our attention to one final, intriguing research question: if recent experience has shown that new leadership styles can be implemented in military organizations with positive results (and if at least the possibility exists that the persistence of other, more traditional styles may indeed produce negative effects),⁵ then why isn't the implementation of these new leadership styles and techniques occurring more often?

There are several possible answers to this question. One is that this is a new approach ("new" to a military setting) and that which is new is sometimes resisted for this reason alone. Historically, there has frequently been resistance to technological innovation in the military, especially when that technology was connected to a new concept of warfighting (e.g., can infantry really defeat mounted cavalry? can an airplane really sink a battleship?) Today however, the pursuit of technological innovation is not only tolerated, but actively sought after by the military. By comparison, the ease at which new ideas (abstractions or "knowledge" products) are adopted by the military lags far behind the adaptation of concrete, tangible "technology" products.

A second reason for the reluctance of the military to make use of these kinds of ideas and approaches may be that "power down" concept is perceived as simply part of a management theory "fad" that will have little influence and go out of fashion very quickly. Related to this is the military's continuing concern with taking ideas from the corporate sector and simply grafting them onto itself, i.e., totally adapting them to a different organizational context without asking how that context is similar to or different from the context in which these

ideas and methods originated and were used effectively. (See Malone and Penner, 1980)

In answer to this, it is, of course, difficult to say how much short- or long-term influence the current themes in management theory will ultimately have. Certainly, many of these concepts have gone beyond the curricula in management schools into the day-to-day operations of real-life organizations and even into the popular press. (e.g., Deal and Kennedy, 1982; Ouchi, 1981; Peters and Waterman, 1982; Peters and Austin, 1985) Still, the concern with taking ideas and methods from the corporate world and applying them to a military organization raises an important point: just how different is the military as an organization from other large organizations? We must know the ways in which it differs (Malone and Penner, 1980) in order to see how much "tailoring" of these ideas and concepts is necessary for a good fit with current military organizational needs. Alternately, as the military organization itself changes (as the need arises, for instance, for different force structures, personnel requirements, etc.) there is the possibility that these different circumstances may themselves require new ideas and ways of adapting.

But let us return to the question: why is there organizational reluctance in today's military to adopt "power down" concepts and new leadership styles? A major reason may be connected with the consequences of organizational risk. What if these ideas and methods, once adopted, are not effective in the organization or work group for which one is responsible? Relatedly, what is the need for change in the first place? Why tinker with a structure and a way of doing things that appears to be working? (This is a variation of the maxim, "if it ain't broke, don't fix it".) Moreover, would the empowerment of lower level leaders erode the power base of those in control of the organization above them? And finally, what if there is little or no perceived support for such new ideas and methods at this higher level? What consequences could such a situation have for an individual leader seen as "going against the flow"?

All of these issues point to well-founded concerns with risk-taking in any organization and especially in the military with its rich historical tradition of centralized authority within a pyramidal structure. What we are really talking about here, however, is the military organizational culture itself and some of its fundamental beliefs: beliefs about new ideas, beliefs about the uniqueness of the military mission and environment, beliefs about the authority structure, and beliefs about organizational risk. To really understand why there is a reluctance on the part of the military to adopt these new concepts and leadership styles thus requires examining certain core organizational values and beliefs. In the following section, we will focus on two of these.

The first is the perception of the nature and function of people within a military organization. Finegan (1987: 43) notes that during the era in which "centralization was synonymous with efficiency, ... innovation and initiative were discouraged, and people were de-humanized, thought of as mere costs of production, like so many bullets or mess kits." This relates to the military belief in standardization and the regarding of both technological and "personnel resources" in this way. Malone and Penner (1980) point out that this is related to warfighting necessity: "standardization assumes ... importance because of the need to replace dead men, broken machines, and shattered units with like components". Thus to make people feel that they are important in an environment (and, moreover, to empower them personally in that environment) flies in the face of regarding people or "personnel resources" as interchangeable, expendable parts.

There is also a second, related reason which impacts on these very central beliefs. Creating an environment that focuses on people is often seen as a misplaced emphasis and the question is raised, is such a "human factors" approach even appropriate to a military setting, or is it "too soft," emphasizing people-needs and programs at the expense of the mission or "bottom line ?" Here we are examining the basic organizational belief about what constitutes an "effective military leader."

Let's look first at the question of appropriateness by returning for a moment to General Creech's and General Ulmer's implementation efforts. Both of these leaders enacted a structural change in their organizations - that is, both emphasized that a highly centralized power configuration would become a decentralized ("power down") one. Importantly, however, it was not simply this structural change which brought about the results that it did: it was the fact that this structural change facilitated a change in the organizational climate, which lead to different expectations and attitudes in that environment. (cf., Likert, 1967: 26) It was the use of this very powerful tool - the change in outlook which the structural change facilitated - that affected the organizational response.

What was this powerful "change of outlook" tool? Both General Creech's and General Ulmer's programs made people feel important. However, this was not the sole objective of either of these efforts: neither was implementing a program designed simply to make people feel better. Both General Creech and General Ulmer clearly and continually articulated their focus on the performance of their units' missions. Both of these leaders recognized that the efforts and excellence of the individuals performing their respective tasks contributed to the effectiveness of overall mission performance. Thus the "secret" to these efforts was that by making people feel important, they gave people a reason to have a psychological investment in their work and in

how well they performed it. Thus an organizational climate in which people felt that they and their needs were important and that the work that they did was crucial to the organization's success helped to create an environment in which a commitment to personal excellence was more easily fostered and thus overall mission accomplishment was enhanced.

Next, there is the important question, is such an approach "too soft ?" This relates to another fundamental belief - that a "military leader" employs a tough, hard-charging, no nonsense approach. Loden (1985) makes the point that in the corporate world, two leadership styles (one traditional and one emerging) stand out. These may have applicability in a military setting as well. She characterizes them as follows:

TABLE 2. TWO DIFFERENT LEADERSHIP STYLES

Masculine Leadership Model

Operating Style:
Competitive

Organizational Structure:
Hierarchy

Basic Objective:
Winning

Problem-solving Style:
Rational

Key Characteristics:
High Control
Strategic
Unemotional
Analytical

Feminine Leadership Model

Operating Style:
Cooperative

Organizational Structure:
Team

Basic Objective:
Quality Output

Problem-solving Style:
Intuitive/Rational

Key Characteristics:
Lower Control
Empathic
Collaborative
High Performance Standards

Source: Marilyn Loden, Feminine Leadership or How to Succeed in Business Without Being One of the Boys, New York: Times Books, 1985, pp. 26, 63.

Although, as Loden (1985: 62, 68) carefully points out, neither of these models is gender-exclusive (the masculine model is not used solely by men and the feminine model is not used solely by women), the perception that this type of leadership style is "feminine" could be an additional reason for its rejection by military leaders, even though it produces effective results. If this is so, there are at least two important questions/implications that follow from this: 1) what impact does the adoption of emphases from the feminine leadership model have on the careers of military women (especially regarding their selection to and their performance in leadership roles), and 2) how does this change in any way the military organizational culture notion of what behaviors and characteristics constitute an "effective military leader?"

This latter question is especially interesting since it could be

argued that elements of both the masculine leadership model and the feminine leadership model are already incorporated in the current organizational ideal of the "effective military leader." The point seems to be that when it comes down to fundamental guiding principles in the military organizational culture, those qualities which define the masculine leadership model are more highly valued than those of the feminine leadership model (e.g., in the final analysis, "hierarchy" is more important than "team," "winning" is more important than "quality output," etc.) The question seems to be then, what describes a "new" leadership model?

The corporate managers that Loden (1985: 78) interviewed saw the ideal organizational climate as recognizing and encouraging both leadership styles. Loden herself argues that both models are essential in a well-functioning organization and calls for "a redefinition of effective leadership - one that emphasizes feminine skills as well as traditional masculine qualities." (Loden, 1985: 278) Such a position suggests that both styles be viewed as equally appropriate to and valid within the organization. Other writers (e.g., Sargent, 1983) suggest that in the future "effective managers, whether male or female, must assume certain behaviors that are characterized as feminine and others that are typically masculine" (Lipton, 1986: 169), implying a third, or "combination" leadership style.

The idea of "situational leadership" (Blanchard, Zigarmi, and Zigarmi, 1985; Hersey, 1985) is closely related to this and is one that is currently being examined in some military leadership training programs. It posits that the particular kind of leadership style that is most effective varies with the situation and is related to 1) the nature of the task and 2) the readiness or preparation of the follower. Thus an effective leader should be skilled in both determining and exercising the right amount of control and direction (from low to high), depending upon the personnel in and task nature of the particular situation. Hersey (1985: 63) describes the four leader behaviors as "telling, selling, participating, and delegating." Blanchard, Zigarmi, and Zigarmi (1985: 56) characterize these four leadership styles as follows:

TABLE 3. SITUATIONAL LEADERSHIP STYLES

DIRECTING
Structure, control, and
supervise

COACHING
Direct and support

SUPPORTING
Praise, listen, and
facilitate

DELEGATING
Turn over responsibility
for day-to-day decision-making

Source: Kenneth Blanchard, Patricia Zigarmi, and Drea Zigarmi. Leadership and the One Minute Manager. New York: William Morrow and Company, Inc., 1985, p. 56.

Note how this situational leadership concept is both opposed to the notion of standardization (advocating not one, but four different leadership styles, as appropriate to the context) and also opposed to many of the characteristics in the military- and corporate-valued masculine leadership model as outlined by Loden (1985: 63). The fact that the military is interested enough in the situational leadership concept to be incorporating it into leadership training programs and that some of its highest-level leaders are implementing these ideas in selected military units tells us something very important. The existence and sanction of new leadership styles within the military - alongside of traditional methods - tells us that the organizational culture itself is changing. Within this evolution, there are no "crystal clear rules" as yet; there is a growing away from older, more traditional notions, yet newer concepts have not yet fully developed and emerged. Although Janowitz (1959) suggested many years ago that patterns of organizational authority within the military were changing, even now it is difficult to see what the new organizational cultural beliefs and paradigms will be. The late twentieth-century is a time of transition in the concept of military leadership. This represents both an opportunity for new ideas and a challenge to them.

Linkages and Intervention Strategies

Let's review what our examination of values, organizational climate, and leadership style has shown us. Data from the Values Survey interviews indicated a perceived relationship between soldier values and organizational climate. The two case studies (TAC and III Corps) demonstrated a connection between leadership style, organizational climate, and soldier values, attitudes, and performance. It was hypothesized that there is a linkage between several basic military organizational cultural beliefs (particularly those concerning the concept of "military leadership" itself) and organizationally sanctioned leadership styles. Furthermore, it was suggested that some of these fundamental organizational cultural beliefs, values, and assumptions may be changing.

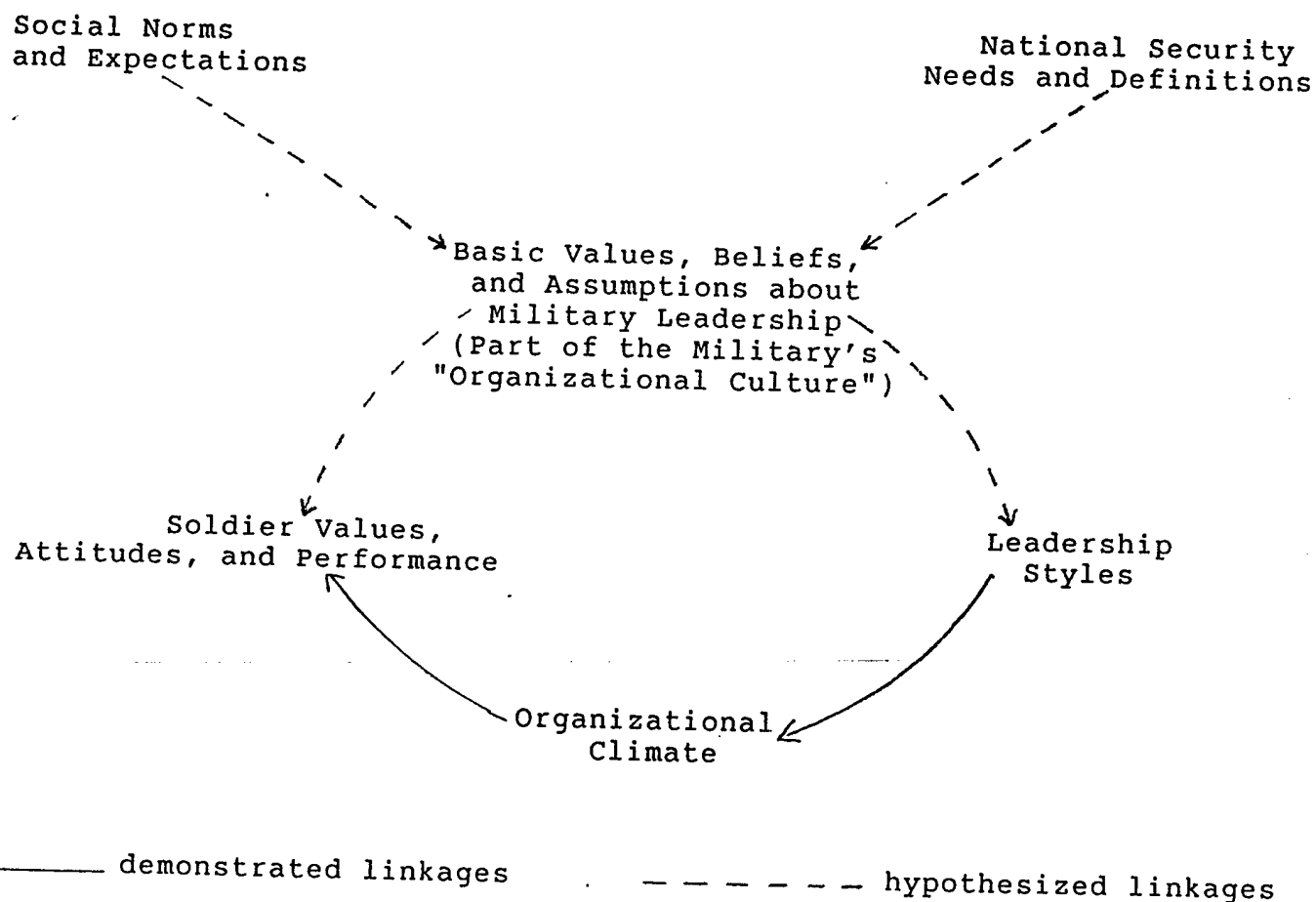
What is the origin of this change? Changes to military organizational structure in response to changing force structure and personnel requirement needs were suggested as possible causes, but we need to examine this more closely. How the military is structured is indeed related to basic military organizational cultural beliefs and assumptions. We can see this coming clearly to the forefront when changes to any military organizational structure (from small to large scale) are proposed, as in, for example, General Creech's restructuring of the Tactical Air Command. Often structural change is resisted for this very reason: because it violates deeply held, "core" beliefs about how a particular military organization should be structured and for what purpose. This relates to very basic questions of mission: how military forces are organized is quite closely related to perceptions and values about how - and where - they will be employed, and what their actual missions will be (warfighting, deterrence, "peacekeeping," etc.). In looking at organizational belief systems, one must closely examine the connection of that belief system with the organization's mission. These questions must constantly be asked: has the mission changed (a lot, a little, not at all)?, have some of the core assumptions and beliefs changed (a lot, a little, not at all)?

Both the military as an organizational structure and the military's organizational cultural belief system which supports this structure are influenced by a sum of external and internal forces. The military structure and its organizational belief systems (its values and its central assumptions) may change in response to certain changing external conditions, for example, changing national security definitions and priorities, budget changes, and changing laws. Larger societal norms and expectations (e.g., ideas about the role of the military in national defense, the development and use of new technology, the changing American family structure, etc.) are another important external influence affecting the values, beliefs, and assumptions in

the military's organizational culture. An internal force for change is the military's own leaders and soldiers, whose changing values, attitudes, and performance expectations themselves may become factors in organizational evolution.

Figure 1 provides a summary of these demonstrated and hypothesized linkages.

FIGURE 1. A MODEL OF SUGGESTED RELATIONSHIPS BETWEEN VALUES, ORGANIZATIONAL CLIMATE, AND LEADERSHIP STYLES



The question here for leadership is: where can we intervene in this model to have an influence on soldier values and performance? The quick answer to this is: "at the point of 'leadership style,'" although "leadership style" itself is influenced by basic organizational assumptions and values. Likewise, as the model suggests, external factors (definitions of national security needs, overall societal norms and expectations) impact upon military organizational belief systems, and internal factors (especially soldier values, attitudes, and performance expectations) may be both influenced by leadership styles and organizational climates and ultimately exert an influence upon them. The key to understanding seems to lie in an honest appraisal, sorting out, and examination of these belief systems which continually seeks to examine and reexamine them for their timeliness and utility. Once this is undertaken, then exploring the nature of the relationship of these crucial variables in the leadership equation can follow more easily. This model represents one start in that direction.

Conclusion

Some interesting and very challenging issues have been raised in our examination of values, organizational climate, and leadership style. Indeed, our analysis has returned us full circle to some of our initial conceptual concerns. It appears that the "climate" in an organization may well be a visible daily display or reflection of the larger concept of "organizational culture" (Schein, 1985: 6) and that, in the case of the military, this organizational culture is changing. Identifying and examining the values and core beliefs which make up the military organizational culture is no easy task, but such an awareness is crucial to our understanding of leadership within this culture. (Deal and Kennedy, 1982; Schein, 1985) This represents an exciting and promising area of research, for when we look at our military organizations today, we see the seeds of what they will be tomorrow.

NOTES

1. Or various terms such as "command climate," "unit climate," "work atmosphere," or "job environment" which are all meant to describe similar phenomena.
2. "Events or circumstances in a unit" could be conceptualized as a component of "organizational climate" because it was the reactions to and the evaluations of these circumstances that the soldiers were targeting as the reasons for value decline in first-termers. "Unit tone" could be seen as a component of "organizational climate" because it represented an articulation by the respondent of how it felt to be in that particular unit. It was an attempt to define and describe what particular elements made up the psychological climate of that unit, i.e., the attitudes and expectations for behavior that were pervasive throughout the organization. And finally, "the interaction of the environment and the individual" (especially as it is defined here as the attitudes of those in the environment "rubbing off" on others) could be viewed as a component of "organizational climate" because of its fit with the "interpersonal relationships" dimension of Hall and Schneider's (1973: 12) four features of organizational climate.
3. Malone notes that on these thirty-five factors related to "moral/ethical values, professional competence, leadership, decision making, and similar 'professionalism' factors ... as assessed by Army leaders, Fort Hood stood higher than the U.S. Army average on 33. On 14 of these factors, the difference was statistically significant at the .05 level or higher." (Malone, 1985: 12)
4. It is hypothesized here that the effect of "leadership style" on "organizational climate" is a direct effect and that the effect of "leadership style" on "organizational performance effectiveness" is an indirect effect via "organizational climate". This is in keeping with Likert's (1976: 26) distinction between causal, intervening, and end result variables.
5. As the data from the Values Survey interviews seem to suggest.

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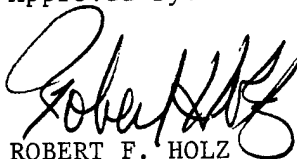
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Values and Commitment in U.S. Army Combat Units

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ABSTRACT

This paper describes the perceptions of soldiers from seven combat companies on how their values and the values of others in their unit changed since joining the Army and why these changes, if any, occurred. The data were obtained from seventy-three soldiers in one-hour long interviews conducted to supplement a wider questionnaire survey. About 60% of the sample indicated their values had changed. First-term enlisted soldiers typically perceived that their own values had stayed the same or become more important to them while the values of their peers had become less important. Unit leaders (NCOs and officers) typically felt that the core soldier values of first-term soldiers had declined since the soldiers left their initial training. The connections suggested in the data between the importance that soldiers attached to values, the bonding of first-term soldiers to their immediate leaders, and their commitment to task accomplishment and to career orientations are explored in four conceptual models. An organizational socialization framework is suggested to interpret these results.

VALUES AND COMMITMENT
IN U.S. ARMY COMBAT UNITS

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Introduction

Purpose. The purpose of this paper is to describe soldier perceptions of their values and the values of others in their combat company and to relate that data to the concept and measurement of "commitment". The scope of the paper includes a section on why values and commitment have had a resurgence of interest, a description of the methodology and sample, the presentation of results, a discussion of these findings and the development of four conceptual models, and suggestions for directions for further research.

Research Trends. The constructs of values and commitment have traditionally been of interest to behavioral and social scientists. The "founding fathers" of these disciplines addressed the topics to explain behavior, as did leading scientists in the middle years of this century (e.g., Parsons, 1949; Williams, 1970; Rokeach, 1973). In part, due to a focus on power and system structures, and with the advent of the computer and sophisticated quantitative methodologies and statistics in the late 1960's and 1970's, research on values lessened and became diffuse. However, a values renaissance took place in the 1980's with research focusing on business organizations (Ouchi, 1981; Peters and Waterman, 1982) where values were deemed both critical to organizational success and the responsibility of top management. Substantial impetus for these investigations came from the perception that American business was losing its competitive edge to the Japanese who had successfully adopted our own management theories, which we were ignoring.

* The opinions expressed are those of the authors and do not necessarily reflect the position or policy of the U.S. Army Research Institute or the Department of the Army.

The U.S. Army, like business, has given renewed attention to its traditions and values since the start of this decade. Army officers moved from analyzing the post-Vietnam malaise (e.g., Hauser, 1973) toward focusing attention on building a strong, cohesive Army, based in part on values and commitment (e.g., Henderson, 1985). It is expected that any battlefield opponents the Army may face in the future are likely to be highly motivated from religious or political values; consequently, American forces must be strongly motivated, based on their own values and belief systems.

Values Survey. The Secretary of the Army, John O. Marsh, Jr. and the Chief of Staff of the Army, General John A. Wickham, Jr. announced that "Values" would be the Army theme for 1986 (see Appendix A). Pursuant to the "Values" theme, the U.S. Army Research Institute (ARI) was directed to conduct a survey of soldiers to determine what values were important to them. ARI developed a list of fifty values, including items representing core American values, core soldier values, and other values pertinent to the task and/or used in relevant past research. These values, along with organizational, leadership, and demographic items formed a questionnaire set administered to 5737 soldiers and Army civilians during 15-17 January 1986 at ten Army posts situated across the continental United States (CONUS). (See Appendix B)

The research, using a cross-sectional approach, assessed the importance of values to new recruits, enlisted soldiers just completing their initial training, soldiers and leaders in combat units, a general sample of soldiers from private to lieutenant colonel, and Army civilians. While the survey results showed strong support for the core values across the Army, the percentage of first-term soldiers in combat units who considered the soldier values very or extremely important to them personally was noticeably lower than in the other groups sampled. The data further showed a strong positive association between the bonding of first-tour soldiers to their immediate leaders, the importance they attached to values, and their career orientation and intentions. (For greater detail, see Siebold and Tremble, 1986 and Gilbert, Tremble, Brosvic, and Siebold, 1986.)

At the 18 February 1986 briefing back to the Secretary of the Army and the Chief of Staff of the Army on the results of the Army Values Survey, ARI was directed to administer the survey at overseas (OCONUS) locations. Consequently, arrangements were made to conduct the survey in April, 1986 at U.S. Army sites within the Federal Republic of Germany. In addition to a revised set of questionnaires, ARI developed an interview schedule. The purpose of interviewing was to determine whether combat unit soldiers interpreted the value items in a consistent manner, whether they perceived the value patterns which were obtained in the CONUS results, their explanations for any perceived patterns, and their opinions on what could be done to build strong values in the Army. Additionally, the interviews were expected to shed light on any differences between the stateside (CONUS) and overseas (OCONUS) samples.

Methodology

Procedure. The U.S. Army in Europe (USAREUR) has an active, ongoing, and critical military mission. Thus research on values had to be conducted on a minimal interference basis. ARI provided Headquarters, USAREUR with background information on the research and a preferred sampling plan, based on position within unit, rank, and demographic variables. The HQ, USAREUR Office of the Deputy Chief of Staff for Personnel then worked with subordinate commands to schedule specific locations, units, and dates as well as to coordinate other logistics.

A research team from ARI and others within the personnel community in the Washington, DC area travelled to Germany to actually collect the data. The research team size varied from five to eight members over the three week data collection period, 10 April to 3 May 1986. Research team members administered the questionnaires to the individuals who filled the fifty-one positions within a combat company requested for interview. Frequently, several companies took the questionnaire at the same time. Immediately following completion of the questionnaire, ten individuals filling designated positions within a targeted company were interviewed one on one by research team members. Since the individual interviews took about an hour each, time constraints limited how many company sets of ten could be interviewed. (For a location of survey sites and a summary of the "values" items, see Appendixes C and D).

Sample. Time and resource constraints only permitted interviews in seven companies. Within each company, the requested ten interviewees were the Commander, the First Sergeant, a Platoon Leader, his Platoon Sergeant, and within that platoon, a Squad or Team Leader and two of his soldiers and another Squad or Team Leader and two of his soldiers. Because of the vagaries of field research, the requested platoon/squad integrity was not always met, although all ten interviewees were from the same company. In some cases, the person "acting" in a position was interviewed because the position incumbent was not on the post. In one company, the team interviewed an extra squad member. In another instance, an additional Commander and First Sergeant agreed to be interviewed after their company took the questionnaire. The total number interviewed was thus seventy-three. Demographic information on these seventy-three interview respondents appears in Appendix E.

Findings

Several major findings emerged from an analysis of the interview data. These are summarized and discussed below.

FINDING: Most of the soldiers interviewed said that their values had changed as a result of their Army experiences.

When asked to "consider your experiences in training and unit assignments; have these Army experiences changed your values in any way?," about three out of five respondents said "yes". Most of these (a little over half of the total sample) felt that this value change had been in a positive direction. (See Table 1)

TABLE 1. PERCEIVED VALUE CHANGE IN SELF AS A RESULT
OF ARMY EXPERIENCES

	Overall Positive Change	Overall Negative Change	No Change	Total
Enlisted	14 (56%)	1 (4%)	10 (40%)	25 (100%)
NCOs	16 (50%)	4 (12.5%)	12 (37.5%)	32 (100%)
Officers	8 (50%)	1 (6.25%)	7 (43.75%)	16 (100%)
Total	38 (52%)	6 (8%)	29 (40%)	73 (100%)

The respondents' answers to the value change question are interesting since virtually all of them elaborated on their answers beyond a simple "yes" or "no". Thirty-eight of the forty-four of those who responded that their values had changed indicated that they felt that this change had been in a positive direction, that is, that their Army experiences had bettered their values or had caused certain values to become more important to them. Significantly, respondents often cited specific examples of core soldier values improving or becoming more important to them. (See Appendix D). However, six of those interviewed who said that their values had changed reported that their Army experiences had had the opposite effect: that is, they said that a value change for them meant a value decline. (For instance, a decrease in honesty and a desire to do good - both values which have a positive connotation - was cited, while an increase in, for example, stealing [spare parts and tools], drinking heavily more often, and doing things to look pretty rather than to do things right - all values which have a negative connotation - were also cited.) Statements about negative value change effects were found in all three groups: junior enlisted, NCOs, and officers.

Significantly, 40% of those interviewed felt that their Army experiences had not changed their values. Further analysis of respondents' answers to the "value change" questions revealed some possible reasons for this. "Values" were defined for the respondent by the interviewer at the beginning of the interview as "things that are important". Because of the

global nature of this definition, respondents were in a situation where self-definition played a key role. Thus they responded to the question in terms of what they felt the notion of "values" meant to them personally. The data suggest that some respondents interpreted values as fundamental belief systems which they had acquired early in life, while others saw "values" as more akin to notions of the appropriate (specific behavioral expectations) or even as personality characteristics ("quirks"). These different self-definitions seemed to be an important factor in the respondents' answers: those who defined values as fundamental belief systems generally perceived them as unchanged by their Army experiences, while respondents who saw values as notions of the appropriate or as personality characteristics more indicative of attitudes, were likely to say that their values had changed. Of the twenty-nine respondents who reported that their values had not changed as a result of their Army experiences, four made explicit and specific reference to values as underlying belief systems with such comments as "values don't change," "(my) values were set before I came into the Army," "no...change; I can see attitudes changing, but I can't see values changing," and "most of the values that I have I've always had; values have not changed, attitudes have".

FINDING: Most unit soldiers felt that their own values had not become less personally important but rather had become more important to them. However, when asked about the values of their peers, most unit soldiers felt that these had declined.

FINDING: Most unit leaders (NCOs and officers) felt that the values of the soldiers that they led had declined.

At a later point in the interview, unit soldiers were asked, "Since you have been assigned in this unit, have core soldier values become any less important to you than they were when you were still in training?" and "Have you noticed such a decline in your peers in your unit?" NCOs and officers were asked, "Have you noticed this decline in the first-termers you lead?" Summaries of the respondents' answers to these questions are shown in Tables 2 and 3.

TABLE 2. PERCEIVED VALUE CHANGE: ENLISTED

	Have your own values become less important?	Have you noticed value decline in your peers?
<u>Enlisted</u>		
Yes	3	19
No	10	4
No-Even More Important	10	0
Don't Know	0	0
No Answer	2	2
Total	25	25

TABLE 3. PERCEIVED VALUE CHANGE: NCO AND OFFICER

Value decline in first-termers?

	<u>NCO</u>	<u>Officer</u>
Yes	24	10
No	2	5
No-Even More Important	1	1
Don't Know	2	0
No Answer	3	0
Total	32	16

Thus the unit soldiers (E1-E4) in this interview sample attributed the "values as less important" pattern shown in the survey results to others, but not to themselves. In fact, most indicated that core soldier values had either not declined or had become even more important to them. Two reasons particularly cited for core soldier values becoming more important were promotion and advancement in job responsibilities, and the taking on of family responsibilities. (The three soldiers who agreed that core soldier values had become less important to them personally most often cited a change in unit assignment and a resultant decline in motivation as the reasons.) Thus, in the opinion of most unit soldiers interviewed, "value decline" described the situation for other unit soldiers, but not for them.

FINDING: Most soldiers felt that they understood their leaders' values. Unit leaders (NCOs and officers) also felt that this was the case.

The interview situation provided the opportunity to take a closer look at the connection between soldiers' and leaders' values. Unit soldiers were asked, "Do you believe that you understand the values of your leaders?" Unit leaders were asked, "Do you believe that the soldiers you lead understand your values?" Then respondents were questioned, "How important is it that you understand your leaders' values?" or, "How important is it that the soldiers you lead understand your values?" These results are displayed in Tables 4 and 5.

TABLE 4. PERCEIVED UNDERSTANDING OF VALUES OF OTHER GROUPS

Do you understand your leaders' values?

	Yes	Somewhat	No	No Answer	Total
Enlisted	17	1	5	2	25

Do soldiers you lead understand your values?

	Yes	Somewhat	No	No answer	Total
NCO	26	4	2	0	32
Officer	13	3	0	0	16

TABLE 5. IMPORTANCE OF UNDERSTANDING VALUES OF OTHER GROUPS

How important is it that you understand your leaders's values?

	Very Important	Important	Somewhat Important	Not Important	No Answer	Total
Enlisted	9	10	0	4	2	25

How important is it that the soldiers you lead understand your values?

NCO	19	12	1	0	0	32
Officer	9	2	4	1	0	16
Totals	37	24	5	5	2	73

About 68% of the unit soldiers (17 out of 25) felt that they understood their leaders' values. About 81% (39 out of 48) of their NCO and officer leaders felt that the soldiers understood their (the leaders') values. Although precise comparisons cannot be made because of different sub-group sizes, this finding suggests that leaders may perceive that their values are being understood by their soldiers to a greater extent than they actually are.

FINDING: The most frequently mentioned reasons why it was important for soldiers to understand leaders' values were "to know what the leader expects," "to get the job done," and "because leaders are role models".

When asked how important is it that soldiers understand their leaders' values, many of the respondents also offered reasons why this was important. Here, several themes emerged: on the enlisted side, unit soldiers felt it was important to understand their leaders' values so they wouldn't break rules, so that they knew what behaviors were expected of them, so that they could get promoted, and because they believe that their leaders were figures to emulate (that soldiers could learn from them). NCOs felt that it was important that the soldiers understood their (the NCO's) values so that soldiers could be trained correctly, so that the job could get done, so that good working relationships and teamwork would occur, so that soldiers needed less supervision, and because it was important for soldiers to have a role model. NCOs also suggested that such an understanding was important in order to get the soldiers to follow them, so that soldiers could understand the particular NCO better, and because the soldiers' performance reflected on the NCO. Officers also noted the importance of role modeling, and in addition suggested that understanding values was necessary in order to get soldiers to perform, and to accomplish the mission. They suggested that if a soldier knew his leader cared about him, then he would follow him (obey his orders). Reasons cited by officers why an understanding of the others' values was not overly important included the themes that a soldier did not need to understand but only to obey; that an understanding of values was not important, but a sharing of values was; that soldiers would follow their own standards over

which a leader had little influence; and that an understanding of a particular leader's "quirks" (presumably, personality characteristics or particular ways of behaving) was more important than a knowledge of that leader's values. Mentioned by both officers and unit soldiers was the idea that while it was important for soldiers to understand their leaders' values, it was just as important or even more important for soldiers to understand their own values. A summary of the opinions that interview subjects offered as to why it was important for soldiers to understand leaders' values appears in Table 6.

TABLE 6. PERCEIVED REASONS WHY IT IS IMPORTANT FOR SOLDIERS TO UNDERSTAND THEIR LEADERS' VALUES

Enlisted (N=25)	
To know what the leader expects	7
To get the job done	2
So I can advance	2
So I can understand them (as individuals)	4
Because leaders are role models	3
Other	1
No answer	2
Understanding of values is not important	4
NCO (N=32)	
To know what the leader expects	5
To get the job done	5
To teach them properly	1
So less supervision is needed	3
Because their performance reflects on me	2
So they can understand me (as an individual)	3
Because leaders are role models	9
Other	4
No answer	0
Understanding of values is not important	0
Officer (N=16)	
To get the job done	6
So they can understand me (as an individual)	1
Because leaders are role models	7
Other	1
No answer	0
Understanding of values is not important	1

Again it appears that the respondents' self-definition of "values" is an influential factor in their answers. They often interpret "values" in a situational and very specific sense: a leader's values mean a leader's standards of acceptable soldierly behavior or, especially, acceptable job performance. An understanding of a leader's "values" is important then because of its consequences: it gives the soldier knowledge about what the leader expects or wants done, and thus what the soldier must know or do.

Most of the reasons cited by the respondents for the importance of a soldier's understanding of leaders' values can thus be conceptualized as both specific and instrumental: to get the job done, to learn what's expected, to teach soldiers so that they require less supervision, and even "so that I can get ahead" (soldiers) or "because their performance reflects on me" (leaders). However, another major dimension of the respondents' answers referred to the soldiers' understanding of the leaders themselves. Both soldiers and leaders who answered this way perceived leaders as "role models".

Was the "role model" response tapping an understanding of values in a more general sense? Looking closely at the responses, two interesting implications emerged. One was the leader's differentiation - or lack of differentiation - between himself and the role of leader: while some made this distinction, others did not. Some leaders felt it was necessary for soldiers to understand them personally (their "quirks," the way they particularly wanted things done), while others emphasized that soldiers could learn values simply by looking at leaders and modeling after them (i.e., that they as an individual and their role as leader/example were one in the same).

Related to this was a second implication. Leaders often saw themselves as (or set themselves up as) role models for a reason: if soldiers knew that their leader cared or if soldiers tried to emulate their leader, then soldiers would "follow" and get the job done. Thus even those answers which appeared to discuss more global and more affective dimensions of values actually had a highly specific instrumental component.

In summary, the three most frequently mentioned reasons for why it was important for soldiers to understand their leaders' values were "to know what the leader expects," "to get the job done," and "because leaders are role models". This finding has significant implications in the next section where four conceptual models are developed which explore some possible linkages between "values" and "commitment".

Values and Commitment: Four Models Suggested by the Data

The interview data from the 1986 Army Values Survey and interview instruments suggest some general models of the relationship between values and commitment. They also point out that, in exploring these relationships, initial conceptual definition is an important concern. For example, defining "values" for respondents as "things that are important" (in the interview schedules) or as "what you consider important" (on the survey) lead them to focus primarily on one of three themes: what was important in the situation itself (the immediate task at hand and the leaders' expectations concerning the correct accomplishment of that task), what was important to success in the organization as a whole (what kinds of behaviors and standards should be exhibited in order to advance in the organization and what characteristics of leaders exemplified these behaviors and standards), or what was fundamentally important to the respondent as an individual (what underlying beliefs were held that transcended specific situational concerns or organizational identities). Additionally, when asked about "values," respondents often referred to "commitment": either 1) commitment to effectively accomplishing a task and thereby helping to achieve an organizational goal, 2) commitment to an organizational identity and career, 3) commitment to interpersonal relationships - the "bonding" between soldiers and their leaders,¹ or 4) commitment to a personal code of ethics, fundamental to their attitudes and actions under any circumstances.

In looking at the linkages between "values" and "commitment" then, conceptual definition plays a key role. Also, the data analyzed in this military sample suggest that "interpersonal relationships" may be an important factor in the relationship between these two concepts.

Model 1: Values and Commitment to Task Accomplishment. Let us examine this by focusing first upon a definition of "commitment" in a very specific and instrumental sense: as commitment to accomplishing a particular task.²

The interview data suggest that when a leader's "values" are conceptualized by the soldier as that leader's standards for performance, then there is a connection between a soldier's understanding of these values and effective task accomplishment. Conceived in this way, standards are thus derivatives of basic values. In this situation, a leader's values - as fundamental belief systems - are perhaps too amorphous or difficult to comprehend, and what is really important to understand is how these values become expressed in the leader's expectations for the soldier's behavior.

¹Either leaders qua leaders (in the role of leader), or leaders as particular individuals, or both.

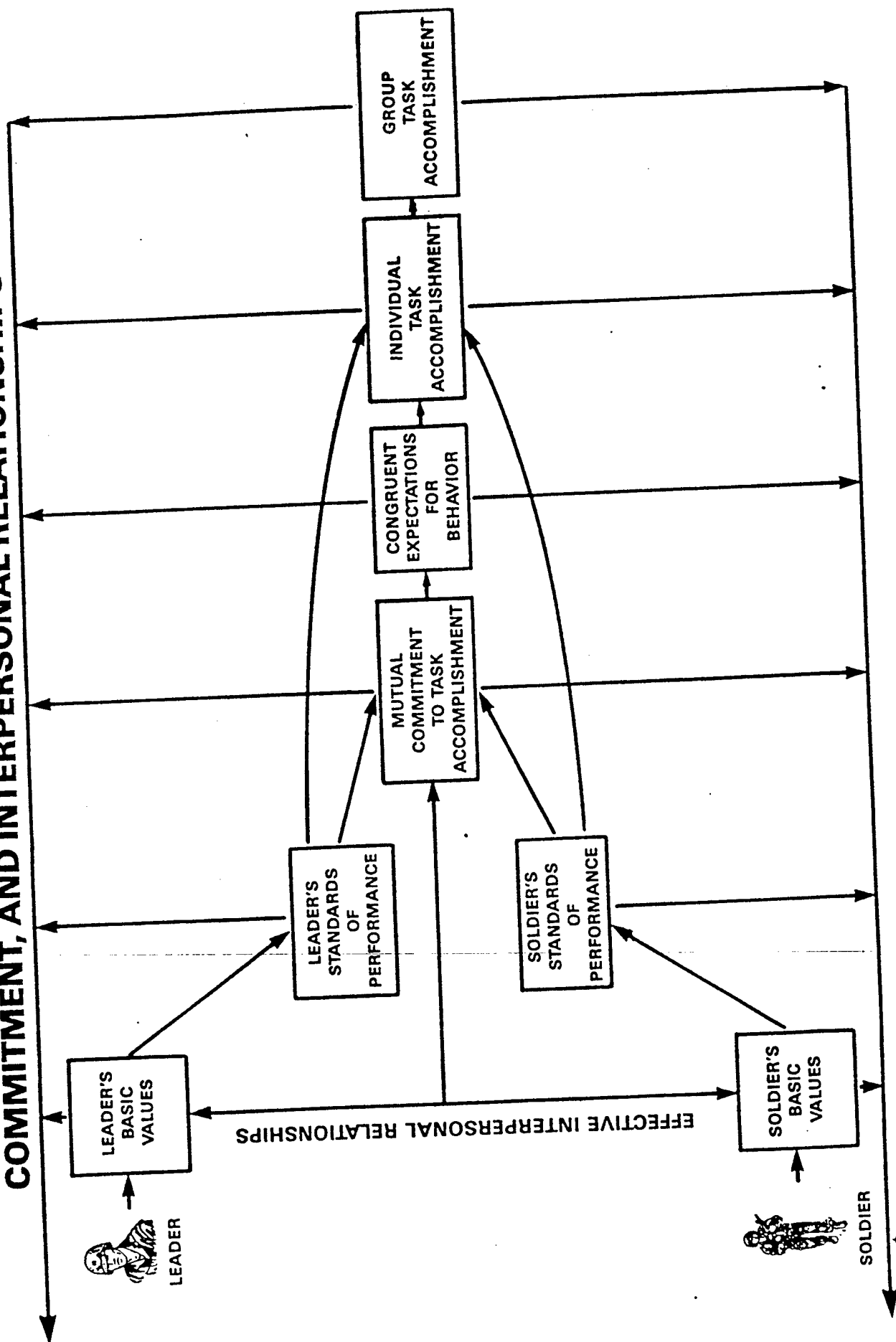
²It is important to note that task accomplishment in this context implies cooperation among leaders and soldiers. That is, efforts are ultimately directed toward the completion of an overall task which represents a group - not an individual -- product or goal. In such a context, the efforts of leaders and soldiers are interdependent.

In the first model then, "commitment" means commitment to task accomplishment. A job gets done by fostering the commitment necessary for its effective completion. But how does this come about? The interview data revealed that interpersonal relationships were felt to expedite task accomplishment if those in the interpersonal relationship shared a similar goal orientation. To this end, "task accomplishment" was frequently mentioned by respondents as the reason for (and the desired byproduct of) the fostering of role modeling behavior in leaders. Thus, effective interpersonal relationships were perceived by some respondents as helping to foster mutual commitment to a task.³ In turn, commitment may translate into congruent behavioral expectations for that task accomplishment.

This model of the relationship between values, commitment, and interpersonal relationships is shown in Figure 1. The arrows pointing away from task accomplishment imply that either leaders or soldiers (or both) could presumably "exit" from the accomplishment of a task if at any point the values they held did not get translated into behavioral expectations specifically conducive to the accomplishment of that task. In this model, "commitment" is thus an intervening variable between "values" and individual - and ultimately group - task accomplishment.

³Much depends here, however, on the definition of "effective". Totally ineffective interpersonal relationships would presumably impede rather than enhance progress toward a group goal, no matter how strong the commitment to a group task.

MODEL 1. ASSOCIATION BETWEEN VALUES, COMMITMENT, AND INTERPERSONAL RELATIONSHIPS



Two important caveats to this model are in order. One is that while effective interpersonal relationships between leaders and soldiers are helpful in fostering mutual commitment to a task (as suggested by the data), they may not be absolutely necessary if 1) both members are capable of individually generating high self-commitment to individual or group tasks, and 2) if interdependence of function is low or moderate (rather than high or constant) in frequency and duration. Note that the arrows in the model indicate that effective interpersonal relationships need not be the only route to mutual commitment to task accomplishment. Both leaders and soldiers have standards of performance through which mutual commitment to a task can be reached in the absence of effective interpersonal relationships, and here the arrow goes directly from individual standards to individual task accomplishment. Individual task accomplishment also need not necessarily lead to effective group task accomplishment and this is noted by the exit arrows at this point in the model.

A second caveat arises in the question whether mutual commitment to task accomplishment (an attitude) precedes or comes as a result of congruent behavioral expectations (an action). The case could be made for either of these interpretations. In the context of the present study, however, the interpretation is made that attitudes influence behavior and come before them in time. This however rests upon a notion of the individual as predisposed toward commitment to task accomplishment: that is, the individual has self-motivation and does not have to be coerced or motivated toward task accomplishment by external pressures.

Most likely, however, there are cases where external motivation is the only way to get an individual to accomplish a task. In the military, this may be especially the case in combat where organizational goals (accomplishment of the mission) may sometimes conflict with individual goals (escaping death or injury). Here external motivation may be very necessary in order to foster an attitude of commitment to the task on the part of the individual, prior to expecting to see the behavior necessary to complete that task. There may also be instances in a military context where less extreme conditions than combat exist, but where, nonetheless, only external motivation will work with certain individuals. In Figure 1, attitudinal commitment was chosen to precede behavioral expectations for a task for these reasons: 1) theoretical support in the literature for this position (e.g., Zimbardo and Ebbesen, 1970), and 2) given a military force comprised of all volunteers (the context in which the current data was collected), the argument can be made that those who do enter the military have at least some preliminary self-motivation to accomplish the individual and group tasks expected of military members.

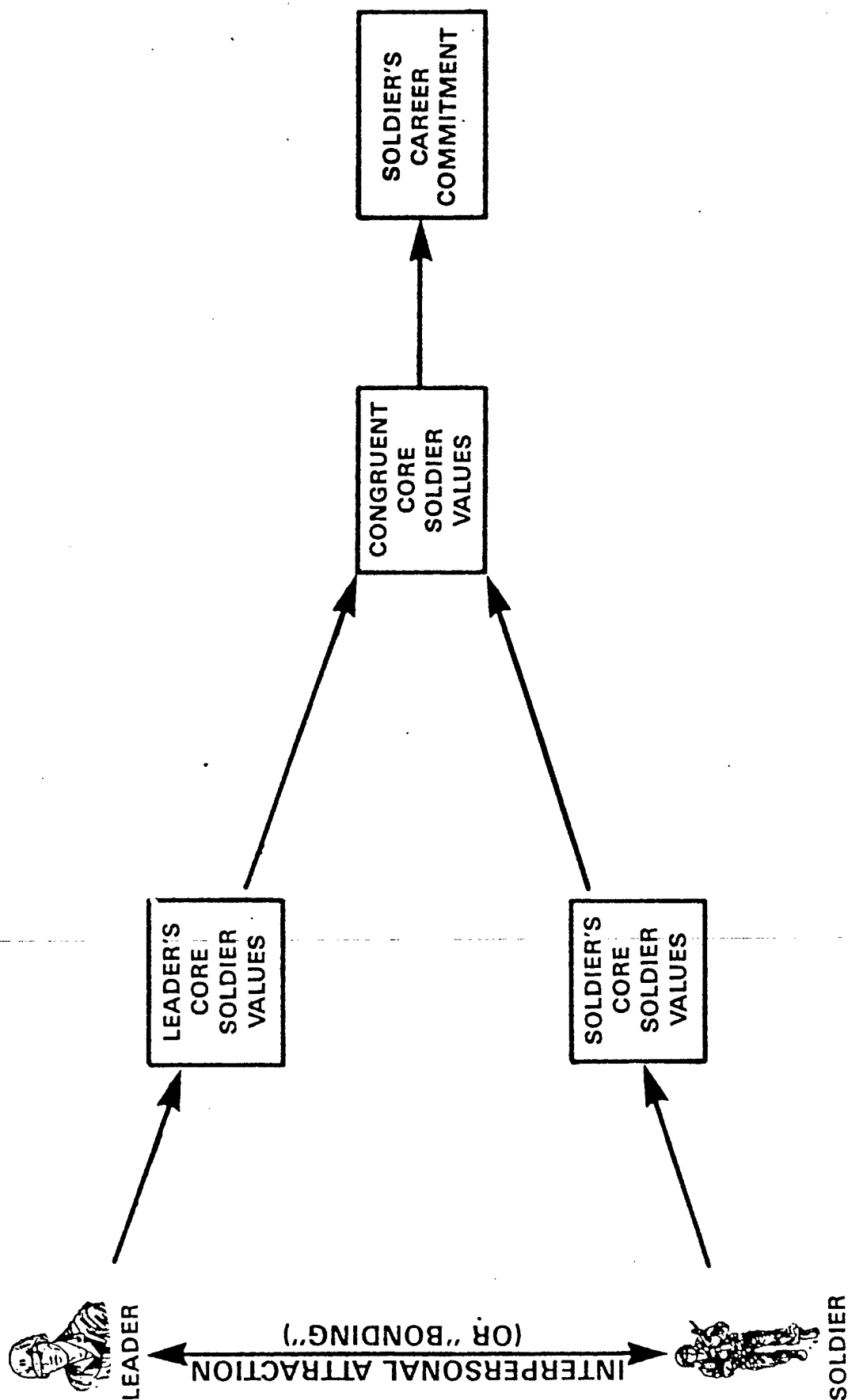
Through accomplishing a particular task, the individual and the group are contributing to the overall military mission by helping to achieve organizational goals. Over time, aligning one's self with the accomplishment of organizational goals may help to foster an increasing organizational identity and commitment to that organization. (Cf., Porter et. al., 1974). In the armed forces, this increasing commitment may translate as "career- commitment" - the intention to remain, or to continue to remain, in the military.

Models 2 and 3: Values and Career Commitment. What models do the data suggest about the relationship between values and commitment when commitment is conceptualized in this way - as commitment to a military career -and how does such commitment come about? As mentioned earlier, when asked why it was important for soldiers to understand leaders' values, the interview data showed the importance of leaders as role models. This suggests that interpersonal attraction between soldiers and leaders (soldiers looking to leaders to embody "core soldier values") can help to foster a congruent system of core soldier values. This role modeling approach leads to a soldier's career commitment because those values are fostered which the military rewards, the soldier who exhibits these values (and their behavioral indicators) advances in the organization, and this then leads to positive reinforcement and a greater propensity toward looking at the military as a career. Results from the larger Army Values Survey lend support to this model: positive correlations were obtained between the importance soldiers attached to values, the bonding of first-term soldiers to their immediate leaders, and a soldier's career orientation and intentions. (Siebold and Tremble, 1986).

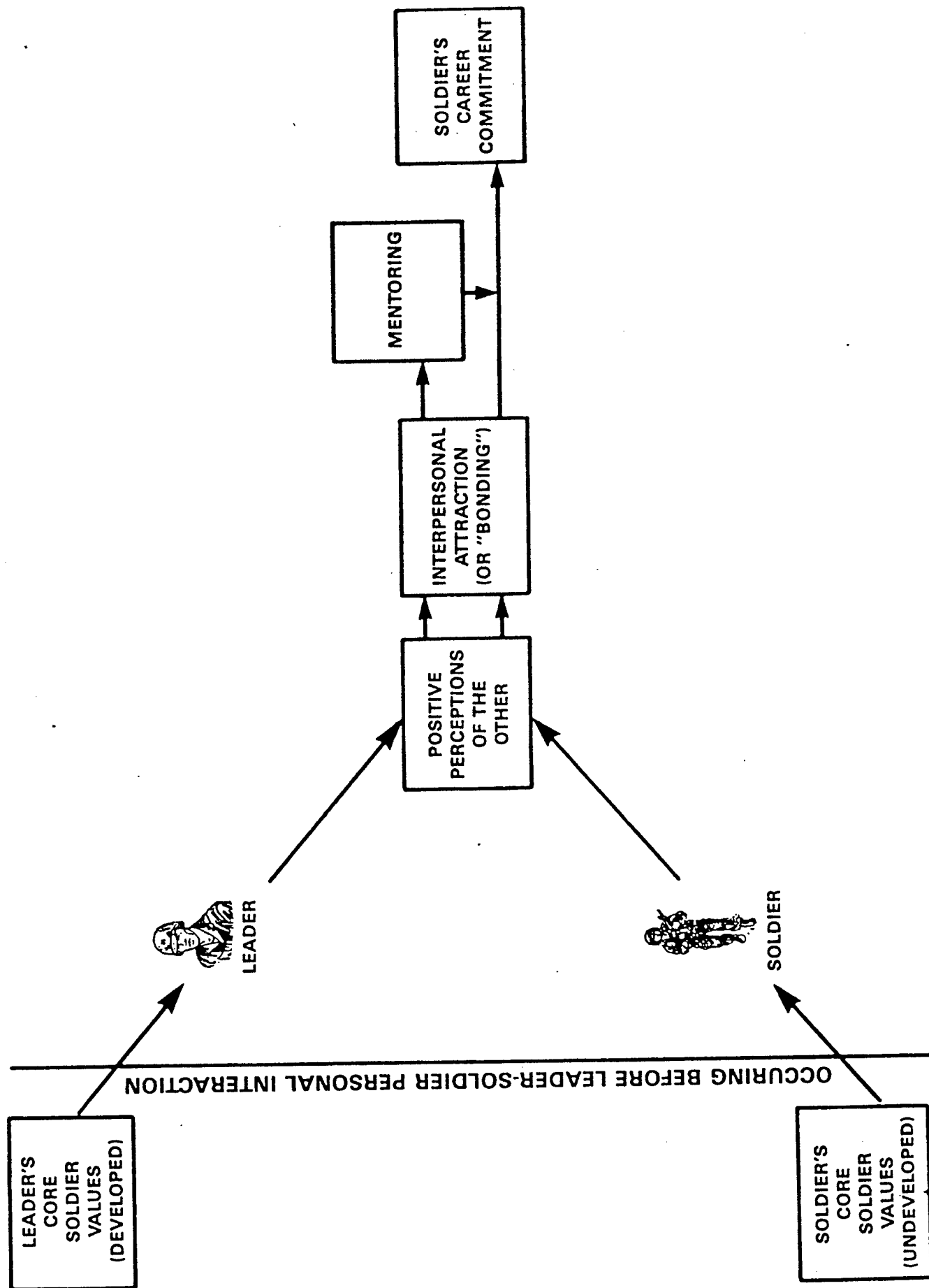
There are two particular challenges in conceptualizing "commitment" as "career commitment" and using the role model approach. One is arriving at a definition of "bonding". Does this phenomenon (especially in the military case) simply represent interpersonal attraction, or is it something other than this, or does it represent a basis of interpersonal attraction plus something else - perhaps a deeper intimacy based upon extended contact over time and/or through mutual exposure to threat and hardship? The varying emphases of several alternative explanations of bonding (biological, social psychological, sociobiological, sociological) need to be further explored. (See, for example, Tiger, 1969; Marlowe, 1983; Devilbiss, 1985)

A second challenge in the role model approach is one of sorting out the timing of circumstances and events, and in this way, getting a better feeling for cause and effect. Does interpersonal bonding between first-term soldiers and their leaders produce a congruence of values which leads to increased career commitment? That is, do first-term soldiers see their leaders as role models, adopting their leaders' values (to include a commitment to a military career) as their own? Alternatively, have some first-term soldiers already adopted (or brought into the service with them) values supporting career intentions, see this as part of a set of values that their leaders have, and subsequently become bonded (interpersonally attracted) to these leaders for this reason? From the leader's perspective, does this latter possibility work in reverse: do leaders perceive certain behaviors and attitudes in first-term soldiers (outward manifestations of values) which seem to mesh with their own values and become interpersonally attracted (bonded) to these soldiers, seeking to mentor them and foster these soldiers' career intentions and commitment? The models showing these possible relationships between values, interpersonal bonding between soldiers and leaders, and commitment (conceptualized as career commitment) are shown in Figures 2 and 3.

MODEL 2. ASSOCIATION BETWEEN VALUES, COMMITMENT, AND INTERPERSONAL RELATIONSHIPS



MODEL 3. ASSOCIATION BETWEEN VALUES, COMMITMENT, AND INTERPERSONAL RELATIONSHIPS



Model 4: An Additive Model of Relationships between Values and Commitment.
An additional interesting possibility suggested by the data here is that these three models may be additive. That is, "values" may have different manifestations: as fundamental belief systems ("basic values") or as occupational belief systems (called "core soldier values" in this context). Although the former is the more inclusive, the latter system may not necessarily derive from it (cf., the "exit arrows" in Figure 1). If, however, occupational values are not strongly inconsistent with an individual's fundamental values, then commitment to the occupational value system can foster other kinds of commitments. This, in turn, can have various sets of possible consequences for both the individual and the organization. These relationships are shown in the summary model in Figure 4.

MODEL 4. ASSOCIATION BETWEEN VALUES, COMMITMENT, AND INTERPERSONAL RELATIONSHIPS

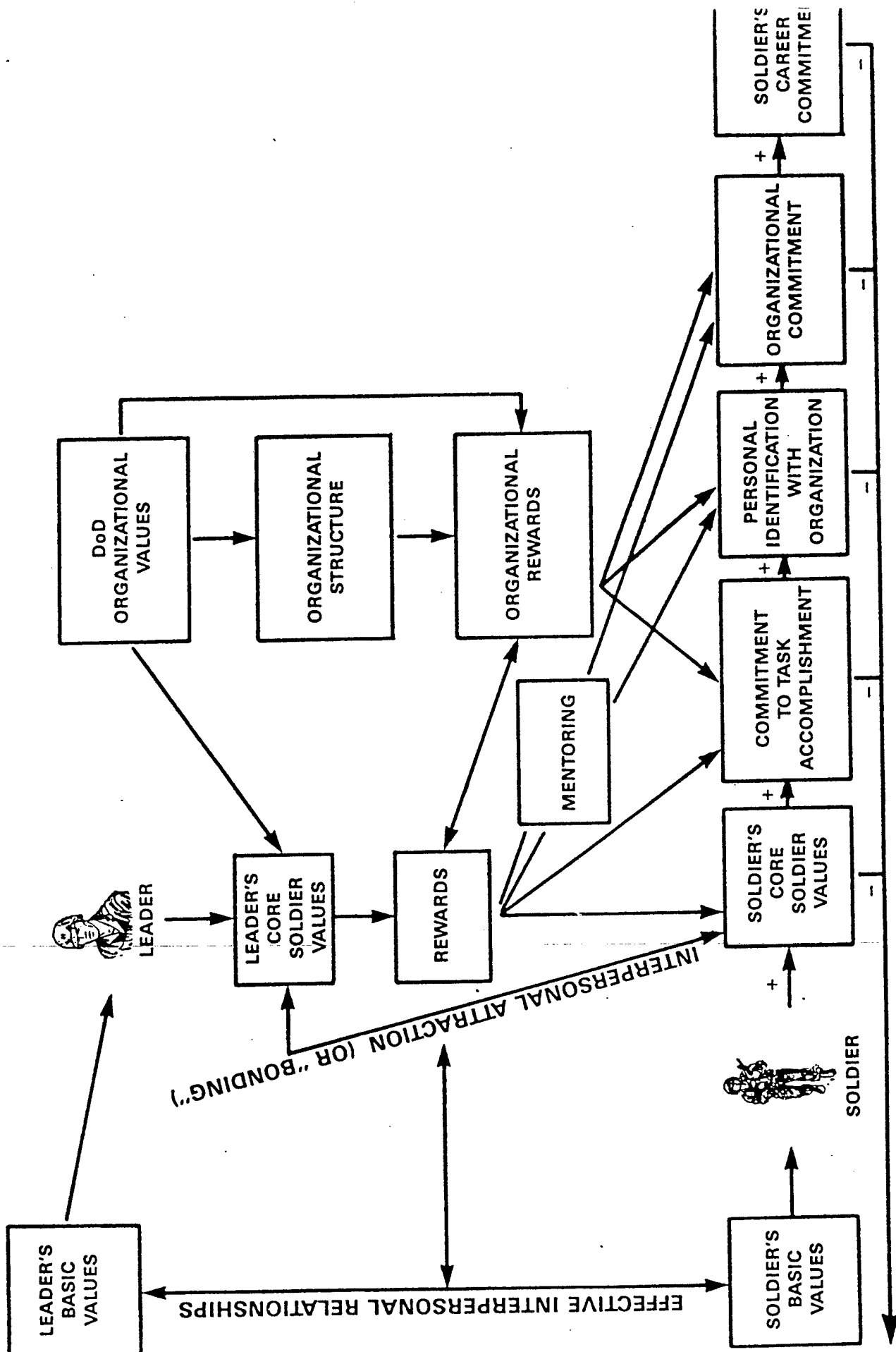


Figure 4 thus models the possible relationships of different types of values (fundamental individual values, core soldier values, leader values [particularly, leaders as role models who embody organizational values], and the organizational values themselves) to different types of commitment (commitment to task accomplishment, organizational commitment, and career commitment). The "outcome" of this model is soldier career commitment: intention to continue to choose military service as an occupational option. Once again, note the arrows "exiting" the model (i.e., moving away from career commitment). All of these paths are marked with a negative sign (-) indicating that if this step for the soldier poses a "dissonant" condition (does not personally follow from the previous step), then the individual will move away from a career commitment. If, on the other hand, a "consonant" (positive) linkage is perceived (indicated by a + sign), then the soldier will move toward a career commitment.

The "process" nature of this model suggests an evolution of positive reinforcements, each increasingly contributing to an end result. For the individual soldier, this means that increasing perceived individual "fit" with values and behaviors that are rewarded by the organization helps to produce a desire to stay with that organization (organizational commitment) and an intention to remain in that occupation (career commitment). For the leaders of that organization, this has consequences, too: rewards will be bestowed upon and mentoring relationships established⁴ with those who demonstrate attitudinal and behavioral support for the values of that organization. For the organization itself, the "payoff" comes in encouraging career commitment among those who most subscribe to that organization's values and purpose. Through a system of organizational rewards (e.g., promotions, assignment opportunities, retirement benefits) the organization reinforces - or fails to reinforce - certain individual values, attitudes, and behaviors. In the military case, both specific leaders (as representatives of the organization) and the organizational structure itself ultimately reward career commitment if an individual's core soldier values, personal identification with the organization, and other individual "commitments" (commitment to task accomplishment and organizational commitment) bear a positive relationship to (that is, they are congruent with, rather than disparate from) organizational values.

The Organizational Socialization Approach. Model 4 suggests the organizational socialization approach as an appropriate one for understanding the complex relationships between "values" and "commitment" in this particular context. This interpretation is supported by data from the interviews revealing that most soldiers felt that their Army experiences had changed their values in a "positive" direction (that is, by soldiers reporting how they took on or increasingly developed core soldier values). Moreover, an organizational socialization explanation suggests that, over time, members become increasingly committed to "appropriate" (as defined by the organization) values and behaviors; thus "old" members are more socialized to the organizational value system than are "new" members. We can see this demonstrated in the interview data, too: most soldiers reported that their

⁴Mentoring can be a positive reinforcement and thus a type of reward, but is usually more affective and long-term, rather than instrumental and short-term.

core soldier values had not become less important to them. Indeed, core soldier values had become even more important to them.

But how is it possible to reconcile the organizational socialization approach with the finding of unit soldier perceptions that core soldier values had declined in their peers, and leaders' perceptions that a general value decline had occurred in first-term soldiers? Here, several factors are important. The organizational socialization perspective is, by definition, a longitudinal analysis approach which looks at the progressive incorporation of the individual into an organizational belief system and an identification with that organization over time. Thus a "filtering" process is at work - to select out those individuals from organizational careers who "fit" less well with organizational value and behavior systems, and to select in (encourage toward organizational careers) those who do.⁵ Thus, from an initially large group of organizational eligibles, certain individuals select and are selected to remain in the organization and others are not.⁶ The pyramidal organizational structure in the military reinforces this "filtering" process.

Thus one interpretation of the interview data is that those leaders questioned on their perceptions of the development of "core soldier values" in soldiers were themselves engaged in a selection/comparison process. That is, they were looking for evidence of core soldier values in their troops and finding that most unit soldiers exhibited a value "decline" - a movement away from "core soldier values" (those values consistent with the military value system and rewarded by the military). Thus, most first-term soldiers' "core soldier values" were seen by leaders as becoming less like those of their leaders, rather than more similar to them. Such a perception may be necessary in order for the leaders to select those soldiers whose core soldier values are, by comparison, "higher," i.e., more in line with leader and organizational values.

The unit soldiers themselves may have been engaged in a selection/comparison process, too. Those who said that core soldier values had become more important to them may have been 1) preparing to self-select for military careers and/or have been 2) comparing themselves to others and, in order to see themselves as "better" soldiers, consequently interpreting other soldiers' core soldier values as relatively lower than theirs.

⁵This can apply not only to the military, but to other professions as well.

⁶This reflects both self-selection and external (outside the individual) selection processes. Moreover, commitment to a military career implies commitment to taking on increasing levels of individual responsibility, since the services ultimately discharge those who fail to receive promotions in rank.

⁷The "pluralistic ignorance" hypothesis may also be at work here. This is the concept that members of a group may demonstrate a lack of information or a patterned misjudgment about attitudes held on some subject by other members of that group. (See, for example, Allport, 1924: Breed and Ktsanes, 1961; Savell and Woelfel, 1977)

That both leaders and soldiers perceived soldiers' core soldier values as "higher" (meaning more strongly supportive or indicative of organizational ["Army"] values) in the basic training environment is not surprising, given that in such an environment core soldier values and appropriate "soldierly" behaviors are clearly seen, articulated, and reinforced. It may be that the organizational socialization model in the military context shows (1) higher subscription to core soldier values at the point of initial entry into the organization,⁸ (2) a "dropping off" and leveling period after initial entry training, (3) "key choice points" (reenlistment "windows") where individual values are periodically compared to organizational values during the soldier's time in the service, and (4) an evolution toward a "high" level of core soldier values once again as the individual becomes more self-identified with the organization, displays increasing organizational commitment, and remains with the military as a career soldier. (Cf., Glickman, 1961; Grusky, 1968)

To test out the direction of relationships and the correlations between the variables in the proposed model then, a longitudinal analysis (following individual soldiers or groups of soldiers over time) is indicated. The use of this approach would provide a test not only for the model itself, but also for the organizational socialization explanatory framework.

The organizational socialization approach suggests a focus on values acquisition as a process - that is, on the notion that values are not simply acquired, but rather are shaped and developed over time. If the process model holds, then such declines and increases in values should be an expected and necessary part of a soldier's self- and occupational- identity development.⁹

An organizational socialization approach may be usefully employed on the macro level as well. Looking at values acquisition as a process can have functional implications for the organization: the "filtering" process

⁸The perceived congruence of one's basic values with military organizational values may be a possible reason for enlistment in the first place. (Cf., Bachman, Sigelman, and Diamond, 1987)

⁹Some of the interview subjects provided unsolicited support for this view when asked about "value decline" in first-term soldiers. The executive officer in one unit said that such a process was "natural and can be expected". A company commander noted that "there is no freedom of growth, no freedom to make mistakes ... (due) to the excessive demands that are placed on the unit and the soldier... (which) preclude a soldier or unit from doing a self-assessment which would further the growth of the individual or unit". And a first-sergeant offered this comment: "The newest soldier is your best soldier. The 2nd-3rd year soldier influences the younger soldier... It's Army-wide... The senior leader values (are) almost as high as the new recruits because of their age. It completes the cycle."

results in the development of career soldiers¹⁰ in the organization who most closely believe in and exemplify that organization's values, and support its purposes and goals.

Conclusions

The general findings pertaining to values presented here from interview data collected in conjunction with the 1986 Army Values Survey are consistent with previous research on Army subpopulations. In addition, they provide us with suggestions on how individual values may relate to other phenomena, such as interpersonal attraction and work group relationships, task accomplishment, and career and organizational commitment. Also, the use of the interview schedule in conjunction with the questionnaire instrument illustrates the importance of triangulation of methodology in values research to obtain depth as well as scope of inquiry.

The models developed and suggested here can have implications for future research in the Army by assisting Army policy planners in better understanding the antecedents and the consequences of the values acquisition process in the military. Moreover, the practical focus of these models can be tested in other employment contexts as well. And finally, these models have implications for the further development of sociological theory on the complex nature of the relationship between "values" and "commitment," the function of values in the workplace, and the potential effects of values education programs within different kinds of organizational settings.

¹⁰

Although new recruits and career soldiers may both exhibit "high" (congruent with the organization's) core soldier values, a major difference between the two groups is, of course, level of competence/skill development.

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30 DEC 85



DEPARTMENT OF THE ARMY
WASHINGTON DC 20310

VALUES

Values will be the Army Theme for 1986. We are proud of the progress made in the past year to strengthen Leadership, the theme for 1985, throughout the Total Army. Previous themes have developed into a solid flow of ideas and programs, each building on the preceding ones. As a result, we have strengthened the Army's winning spirit, physical fitness, excellence, families, and leadership.

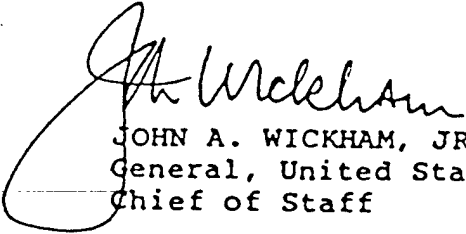
Now we turn to the fundamental values of our military profession. From values we draw purpose, direction, vitality, and character -- the bedrock of all that we do in the Total Army. To the extent that we can strengthen the values of our soldiers, civilians, and families, the Army will be a stronger institution and will be far more ready to fulfill the missions entrusted to it as we face the broad spectrum of threats to our national security.

The values to which we subscribe spring from, and even transcend, those of the society we serve. They become the framework for the lifelong professional and personal development of our soldiers, leaders, and civilians. Our profession involves matters of life and death, and matters of public trust for the responsible care of human as well as materiel resources provided to us. In times of danger, it is the ethical elements of soldierly conduct and leadership which bond soldiers and units together enabling them to survive the rigors of combat. In peacetime as well as in times of danger, rock solid,

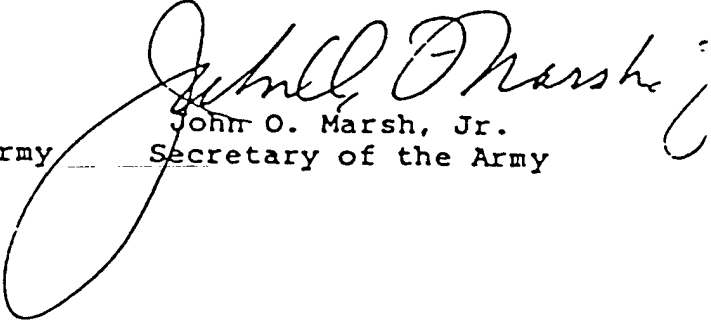
ethical underpinnings help us to resist the pressures to compromise integrity, to cheat, to shade the truth, or to debase patriotism for material gain.

The Army Ethic comprises four enduring values: loyalty to country and the Army, loyalty to the unit, personal responsibility, and selfless service. It is beneath these overarching values that our soldierly and ethical standards and qualities -- commitment, competence, candor, courage, and integrity -- are nurtured and given opportunity for growth. This has to happen in peacetime because in war there is no time.

Values are the heart and soul of a great Army. We ask each of you, as members of the Total Army, to embrace these values and make them a part of your personal and professional lives. We urge you to find ways to temper them like steel. By strengthening the values of our profession, each of us in our own way can make our Army better, and by so doing contribute to the health and security of our great Nation.

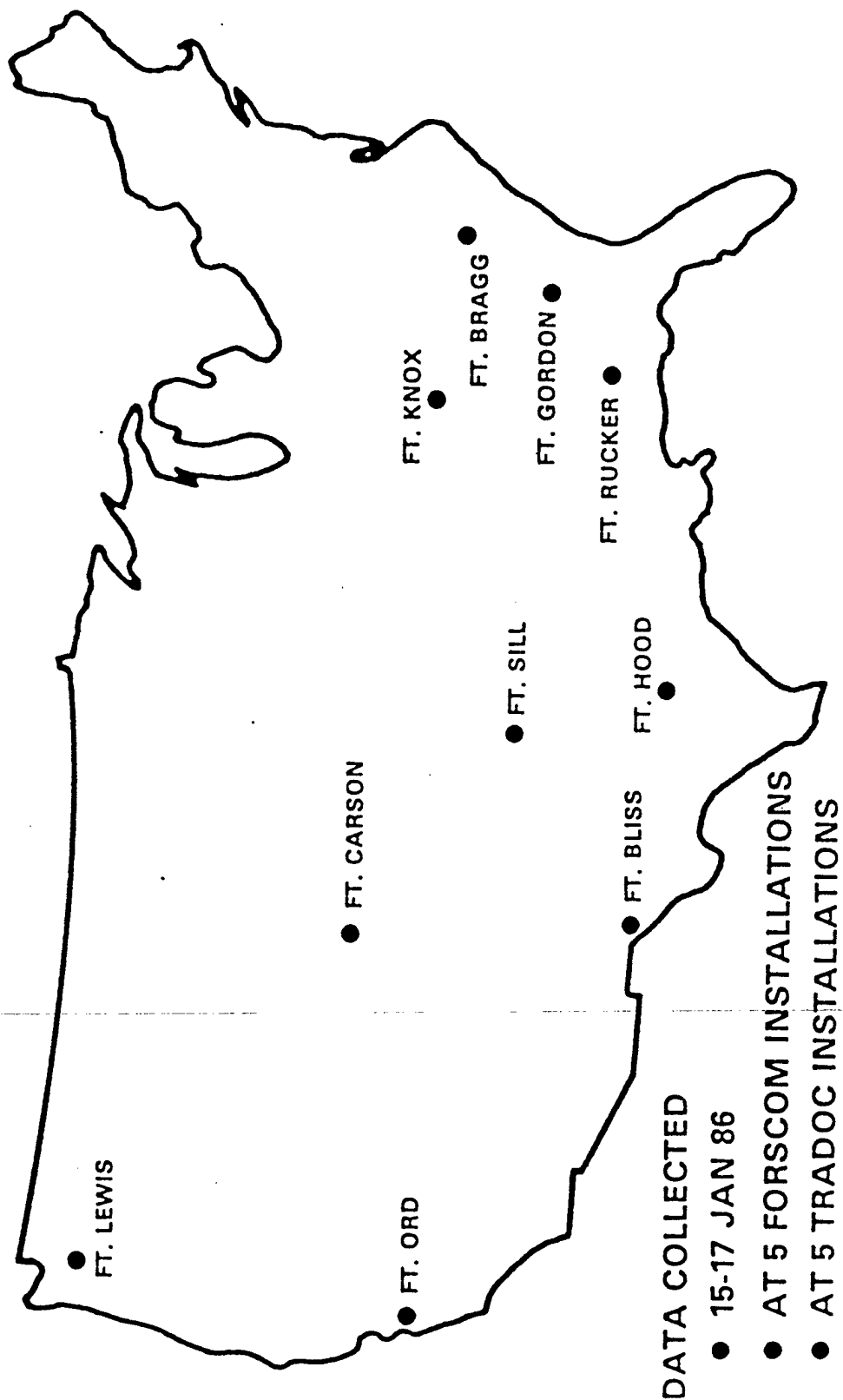


JOHN A. WICKHAM, JR.
General, United States Army
Chief of Staff



John O. Marsh, Jr.
Secretary of the Army

VALUES SURVEYED



USAREUR VALUES SURVEY

V CORPS (14-18 APRIL 86)

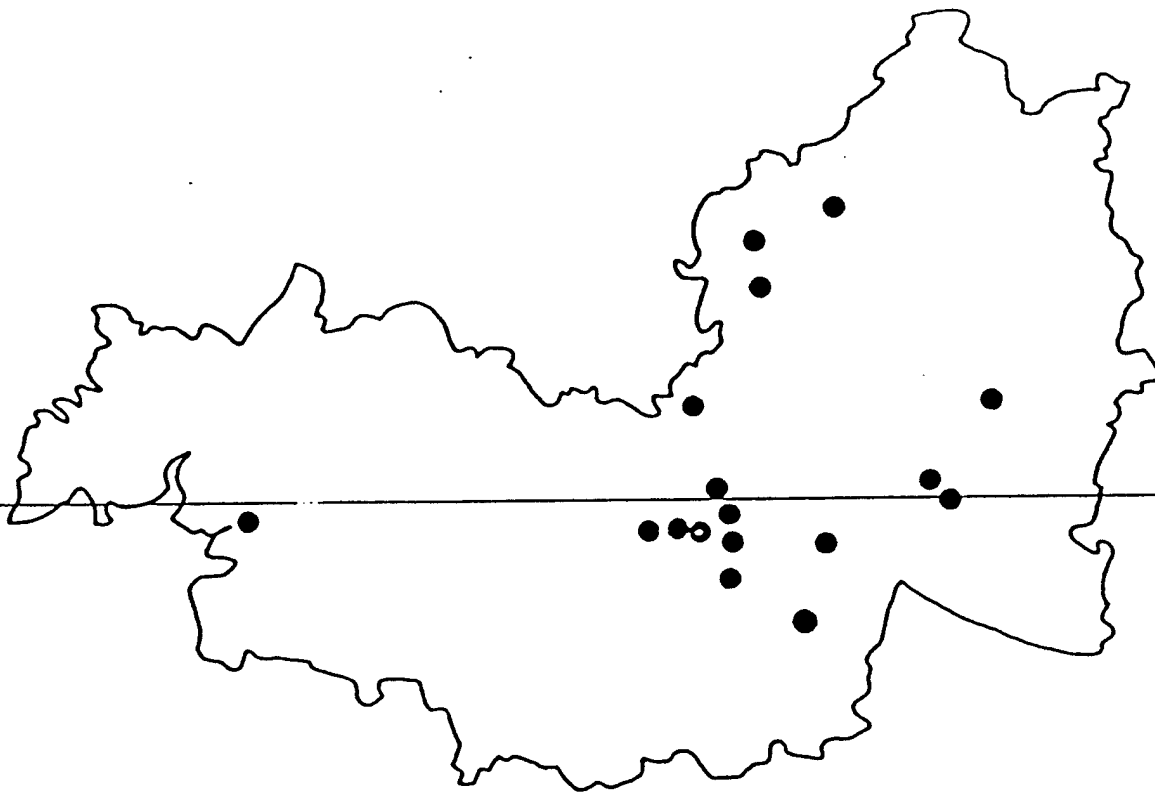
BAUMHOLDER
MANNHEIM
WILDFLECKEN
KIRCHGOENS
GIESSEN
GELNHAUSEN
FRIEDBERG
HANAU
FRANKFURT
WIESBADEN

VII CORPS (24-30 APRIL 86)

ULM
BOEBLINGEN
STUTTGART
BINDLACH
BAMBERG
AMBERG

2D AD (FWD) (1 MAY 86)

GARLSTEDT



The twelve values identified by the interviewer for the respondent as "core values of U.S. soldiers" in the interview schedule of the 1986 Army Values Survey:

1. Personal drive to succeed in your work and advance.
2. Dedication to learning your job and doing it well.
3. Being disciplined and courageous in battle.
4. Loyalty to the United States Army.
5. Commitment to working as a member of a team.
6. Building and maintaining physical fitness and stamina.
7. Loyalty to your unit or organization.
8. Putting what is good for your fellow soldiers, unit, and nation before your own welfare.
9. Taking responsibility for your actions and decisions.
10. Dedication to serving the United States, even to risking your life in its defense.
11. Being honest, open, and truthful.
12. Standing up for what you firmly believe is right.

Interim
Report

HumRRO
IR-PRD-88-05

HumRRO

ARMY CIVILIAN PERSONNEL MANAGEMENT RESEARCH:
FY88 RESEARCH PLAN

C. Mazie Knerr, John P. Ziemak, Paul J. Sticha
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March 1988

Leadership and Management Technical Area

Working Paper 88-04

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March 1988

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This working paper is an unofficial document intended for limited distribution to obtain comments. The views, opinions, and/or findings contained in this document are those of the author(s) and should not be construed as the official position of ARI or as an official Department of the Army position, policy, or decision, unless so designated by other official documentation.

Interim
Report

HumRRO
IR-PRD-88-05

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INTRODUCTION

Civilians are a large and increasingly important part of the total Army workforce. At 485,000 total members, they comprise almost 40% of the Army. They perform many of the Army's support functions, often working side by side with their uniformed counterparts in base operations, logistics, engineering, electronics and a wide variety of other functions. Civilians often supervise military personnel in these capacities, and often military commanders oversee large operations which are primarily civilian.

The importance of the Army's civilian workforce to the Army mission is increasingly recognized; however, the management of that workforce within a military structure has grown more complex. Civilian personnel management is governed by an intricate set of civil service laws and regulations developed outside of the Department of Defense to govern the total federal workforce of approximately 2.7 million. This system does not always serve the Army efficiently, and the differences in the military and civilian systems can create inefficiencies and misunderstandings between two personnel systems which must rely upon each other to accomplish common missions.

As the Army's civilian workforce has grown in size and importance, the Army has increased its efforts to bring its civilian personnel planning and management procedures closer into line with state-of-the-art methods to meet the future needs of the total Army. Over the past several years, the Directorate of Civilian Personnel (DCP) has undertaken several far-reaching efforts designed to upgrade the Army's civilian personnel systems and prepare for the future mission needs of an Army which is increasingly dependent on its civilian workforce. Initiatives such as the Army Civilian Personnel System (ACPERS), the Civilian Forecasting System (CIVFORS), the Army Civilian Career Evaluation System (ACCES), the Army Civilian Training, Education, and Development System (ACTEDS), and the Personnel Modernization Task Force all reflect the drive for systematic self-improvement.

To improve a workforce as large and complex as the Army's civilian workforce requires an integrated comprehensive civilian personnel management research program. The first step in that direction was the development by Caliber Associates of the Army Strategic Plan for Civilian Personnel Management Research: A Roadmap for the Future (Woolley, Croan, & Cohart, 1986). The Roadmap is a keystone in the planning for the Army's future civilian personnel system. It is a preliminary blueprint for developing the information base that Army civilian managers need to identify systemic problems and justify system improvements. It is a guide for research managers to focus on the research that is most critical to support current and future decisions. We use the Roadmap and related work to guide the research described in this plan.

Objectives

In the broadest sense, the goal of this research program is to develop the knowledge base that will best assist Army civilian personnel managers to

perform their functions. Two of the managers' functions parallel our research requirements. Those functions are to identify and develop procedures and policies that will increase the effectiveness of the civilian workforce and to maximize the civilian workforce contribution to the Army mission. The needed research can be organized into three broad objectives identified in the Roadmap:

1. Acquire and Retain High-Quality Personnel, where emphasis is placed on: (a) determining the need for interventions to improve recruitment, selection, training, and development programs; and (b) measuring the impact of such interventions.

2. Increase Productivity and Organizational Effectiveness, where emphasis is placed on developing the measures necessary to determine the need for intervention and to measure the impact of interventions aimed at increasing organizational effectiveness.

3. Create Optimum Workforce Structure/Manpower Planning, which embraces the three subobjectives of determining optimum mixes of military, civilian, and contracted personnel, projecting future civilian manpower needs, and strengthening military-civilian relationships.

The research described in this plan covers a limited range of the research areas in the Roadmap. The contract calls for a preliminary phase to select a set of research areas that we can achieve within the contract resources. The first year's research also selects a set of problems to address within the broad research areas, and designs approaches to solve them. The research during the first year identifies and defines the efficient sequences of affordable research tasks that provide the greatest payoffs for the Army. Fortunately, the previous research provides information to guide that process. Future years will provide measures, plans, and interventions for continued research and development in problem areas that the first year's work determines to have favorable cost/benefit ratios.

The contract has two major activities that continue through the life of the contract, plus two product-producing projects that continue as needed (Figure 1).

1. Personnel Measures Project. The objective of the personnel measures research is to inventory and assess existing measures and to provide the architecture for a data base for civilian personnel information. During the first contract year, work in this project selects topics (Army problems and their solutions) suitable for this research contract. During ensuing years it serves to synthesize information.

2. Candidate Selection Project. The objective of the Candidate Selection Project is to design and implement research to increase the Army's ability to select and promote quality civilian job candidates.

3. Management Training and Development Project. The objective of the Management Training and Development Project is to accomplish research

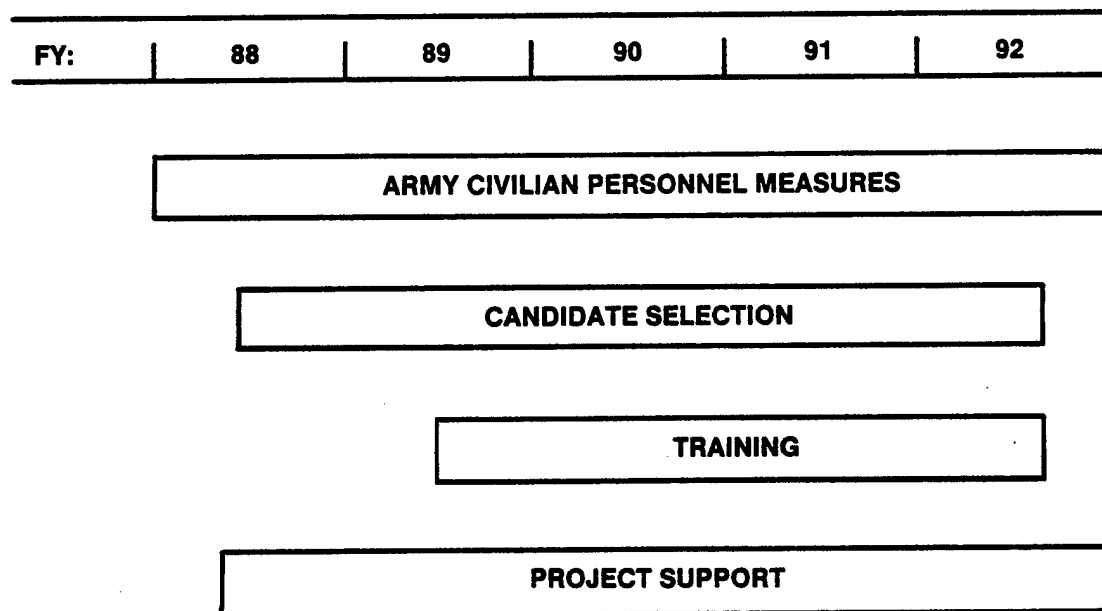


Figure 1. Contract Structure and Approximate Duration

contributing to the formation of a training and development system that produces qualified civilian personnel managers when they are needed.

4. Project Management. This activity allots resources to the projects described above, maintains a Scientific Advisory Committee, integrates findings, controls quality of deliverables, and performs logistic functions within the contract.

In summary, the objectives of this contract are to assess existing sources of data, create new measures, collect legally defensible data concerning personnel issues, provide decision support aids (e.g., cost/benefit methods and analyses), and develop interventions (e.g., training materials and research plans). The overall goal is to provide research and development products to help Army civilian personnel managers conduct their functions.

Organization of this Plan

The Background, immediately following this chapter, summarizes the existing reports and integrates existing information. We present substantial detail from the Roadmap and brief descriptions of the other reports. The Background emphasizes findings pertaining to Candidate Selection and to Management Training and Development.

Two Technical Approach chapters describe our procedures for conducting research this fiscal year (FY) in the Personnel Measures and Candidate Selection Projects. We have completed some tasks in the Personnel Measures project, and have more definite plans for it than for the Candidate Selection Project. Work on the latter Project has not begun, but is in initial planning stages.

The Personnel Measures Project has two goals. First, it applies systems techniques to focus the research activities on the issues that have the best cost/benefit to the Army. Our research design employs systems analysis and cost/benefit analysis techniques to apply the wealth of knowledge compiled in past and current work to the area of Army civilian personnel issues. The second goal is to begin to survey existing information sources (e.g., data bases and the value of data elements in them). The chapter presents our rationale and assumptions, methods, support requirements, potential problems and solutions for each contract task for fiscal year (FY) 88. The concluding section of this chapter presents deliverables and outlines expectations for research to be conducted during the remaining years of the contract.

The Candidate Selection research begins with the problem of selecting first-line supervisors. This work will continue into the next year, and will likely expand to cover training and career development issues. The Technical Approach chapter for Candidate Selection presents our contract tasks in detail for this FY (including rationale and assumptions, methods, support requirements, potential problems and solutions) and presents general plans for the FY89 tasks. Some draft materials for selection of first-line

supervisors will be prepared this FY; however, the full set of draft material will not be ready until early in FY89. The draft materials will be refined and validated during FY89, using the procedures described in the Candidate Selection chapter.

Appendices present the results of tasks that we have completed for the Personnel Measures Project (a systems analysis for Task 1 and cost/benefit analysis for Task 3) and present a draft interview guide for selection topics.

BACKGROUND

Our program of research will build upon the results of previous work that are pertinent to the needs of this contract. This chapter briefly describes the following reports and their importance to our research.

- o The Army Roadmap (Woolley, Croan, and Cohart, 1986)
- o The Army prioritization reports (Clark, Sweeney, and Savell, 1987; Clark and Savell, 1987)
- o The Civilian Personnel Modernization Project Report (Department of the Army, 1987a)
- o The Professional Development of Supervisor's Study (PDS²) (Department of the Army, 1987b)

The Army Roadmap

Information from the Roadmap forms the basis for our research; thus, much of this chapter is devoted to a discussion of those sections of the Roadmap that are relevant to Candidate Selection and to Management Training and Development. The objective of the Roadmap was to present a plan for identifying, prioritizing and managing research on Army civilian personnel management issues. Caliber staff worked in conjunction with a Study Advisory Group (including representatives from the DCP, the Army Research Institute, and other key organizations within the Department of the Army) to document the principal objectives (representing the major functions) of the Army's civilian personnel program. These objectives and their accompanying research areas are listed below and shown in Figure 2:

- o Maintaining a qualified and representative workforce tailored to Army needs, including:
 1. Recruiting needed personnel
 2. Managing both retention and separation
- o Maximizing the productivity of the civilian workforce, including:
 3. Developing supervisory and non-supervisory personnel
 4. Motivating personnel
 5. Maximizing the efficiency of policies, procedures, and processes
- o Ensuring the most effective utilization of civilians within the Army, including:
 6. Determining appropriate civilian functions in peacetime and during mobilization

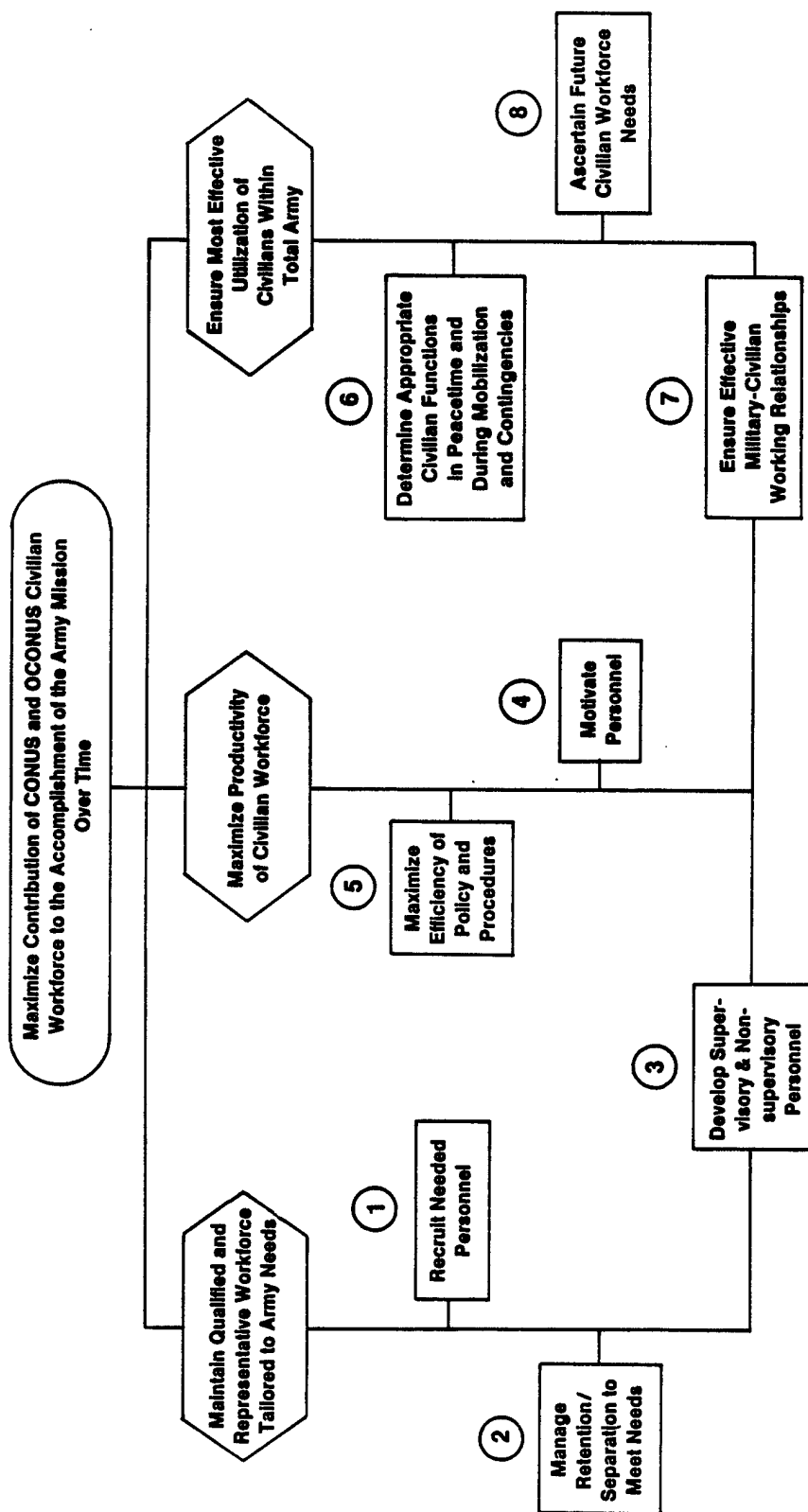


Figure 2. The Relevance Tree

7. Ensuring effective military-civilian working relationships
8. Ascertaining future civilian workforce needs.

Caliber staff conducted in-person interviews with knowledgeable individuals to obtain information about research issues in the eight research areas. The interview data were consolidated into eight "convergence charts" that depict research arrays, categorized according to the eight enabling objectives designated in the Relevance Tree. These arrays provide logical sequences of research activities to accomplish the Army's civilian personnel objectives. Every array contains four potential research phases:

- o Phase I (Establish Baseline Measures) establishes the magnitude of a problem.
- o Phase II (Analyze Issues) defines and documents the problem sufficiently to conceptualize solutions.
- o Phase III (Identify Potential Strategies) builds upon preceding research in order to design specific strategies to meet the objective more effectively.
- o Phase IV (Test and Evaluate Promising Strategies) suggests specific interventions and evaluation techniques. In the majority of instances, Phase IV research questions were the authors' logical extensions of the research described in Phase I through Phase III.

The Roadmap also contained an extensive bibliography for each research area. This bibliography is useful in the present research because it identifies background information.

The following paragraphs present information from the Roadmap in the areas of Candidate Selection and Management Training and Development. We present the four research phases for those two areas. This material represents a guide for our research; however, we will depart from this guide as needed. The research that we conduct may address problems in addition to those outlined below or may require different steps.

Roadmap Issues Identified in Candidate Selection

A number of interviewees identified recruitment/selection as the "number one issue," partly because of the perception that terminating incompetent employees is so cumbersome. Given the time-consuming nature of separation, they stated that it behooves managers to make every effort to select high-quality applicants.

Figure 3 shows the Roadmap convergence chart for one portion of the Recruitment Research Array, which deals with Candidate Selection.

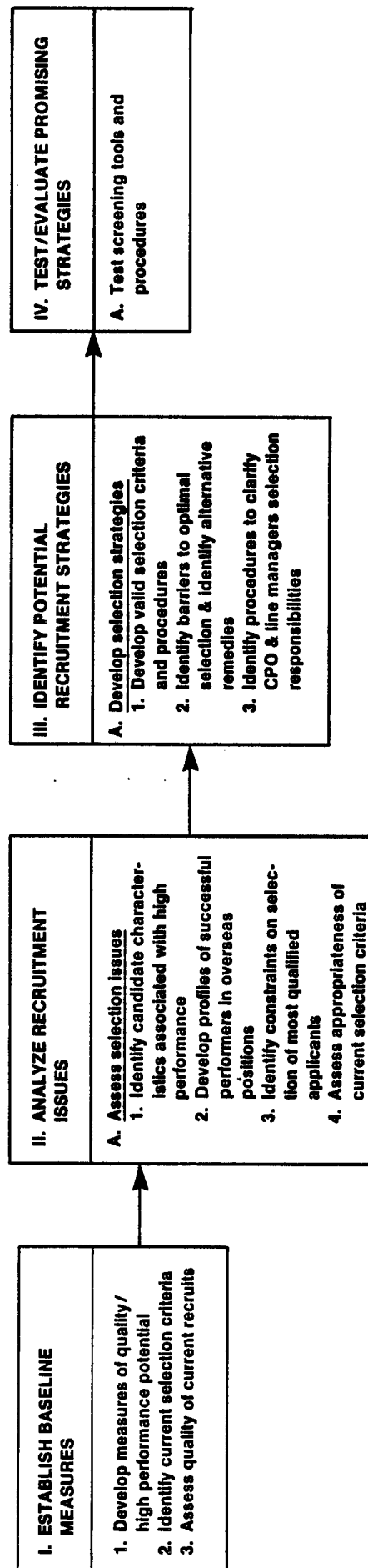


Figure 3. Recruitment Research Array (Candidate Selection)

Some individuals stressed the selection aspect of the recruitment process as being most critical, while others were concerned with the formation of the applicant pool from which they had to select. For most interviewees, the timeliness of the hiring process was also an issue that had an impact on both organizational productivity and motivation.

Phase I: Establish baseline measures for selection. Interviewees noted a need to conduct more basic research in the following areas before beginning research on recruitment and selection issues:

1. Develop measures of quality and high performance potential
2. Identify the current selection criteria used
3. Assess the quality of the current recruit population
4. Determine the Department of the Army's current recruiting success for key occupations relative to other government organizations
5. Measure time lags for filling vacancies by position type.

Successful research in these areas would enable the Army to determine the extent of current recruitment and selection deficiencies and prepare for more targeted research on the problems and prospective solutions.

Interviewees expressed interest in conducting research to determine what constitutes a productive and effective employee in various job series, and in developing criteria to aid in determining how to measure success in particular types of jobs, including technical, administrative, and managerial.

A related concern was to identify the types of criteria now used, so that the Army can assess whether they are valid. Some interviewees suggested that entirely new job descriptions and qualifying criteria may be needed in some areas. An example of a position where job descriptions (and hence selection criteria) may be outdated is security guards, who may have to deal with terrorist threats, but who have no training or background for such work. Another area where concern about operant selection criteria was expressed was the computer science field.

Phase II: Analyze selection issues. Interviewees who emphasized selection as the most important part of the recruitment process suggested that research be done to:

1. Identify candidate characteristics associated with high performance
2. Develop profiles of successful performers in overseas positions
3. Identify underlying constraints on selecting the most qualified applicants

4. Assess the appropriateness of the current selection criteria for a number of different positions.

The first two suggestions deal with criterion development. The first specifies the content and is a logical sequel to research which develops measures of high performance potential.

The second research idea stems from the question: "What kinds of people make the best recruits for overseas positions?" The question does not have to be limited to overseas personnel, but because of the amount of money spent in getting and maintaining personnel in OCONUS slots, it is seen as vital that there be some ability to predict success in an overseas context so as to avoid early returns based upon inability to adapt to a foreign context. Research might determine potential characteristics which are quite distinct from those needed for a similar position in CONUS, and could begin by describing those now considered by supervisors or peers to be highly adapted to a foreign situation or even to a specific cultural context. It may or may not be the case that an individual who performs well in Germany is equally able to function well in Korea, for example.

Phase III: Identify selection strategies. The three suggested research topics related to identifying research strategies were to:

1. Develop valid selection criteria and procedures
2. Identify barriers to optimal selection process and identify alternative remedies
3. Identify procedures to clarify CPO and line managers' selection responsibilities.

New selection strategies would stem from a re-examination of current selection criteria and procedures, as well as from identified existing barriers to effective selection. Such strategies might be tested by civilian personnelists but would have to be agreed upon and include input from managers as well. A recurrent theme in the interviews was the perceived lack of coordination between personnelists and managers in recruitment efforts. From a managerial perspective, the civilian personnel system was not seen to be closely tied to mission requirements of the organization, nor were personnelists seen as accountable to "outside" line managers. Line managers were often convinced that personnelists did not have the technical expertise to select and forward qualified candidates for certain positions, and were sure that personnelists did not see themselves as belonging to a "service organization." At the same time, managers (both civilian and military) did not see themselves as having either the time nor the experience necessary to recruit without CPO support and assistance. Without a clear definition of the respective roles and responsibilities of managers vis-a-vis civilian personnelists in the recruitment process, it may prove difficult to devise workable strategies.

Phase IV: Test and evaluate promising selection strategies. A possible final step in the research process would be to select a number of recruitment and selection strategies which have been developed, put them into practice in a limited context, and evaluate the outcome. The MIPS (Model Installation Programs) are potential contexts for (a) testing and evaluating new screening tools and procedures, and (b) modeling streamlined hiring procedures.

Roadmap Issues Identified in Management Training and Development

The Roadmap contained no research array designated "management training and development." The research array discussed here, "Personnel Development" is the array most relevant to the topic of Management Training and Development. Figure 4 shows that array.

Policy-level interviews and meetings indicated that the objectives having to do with developing the knowledge, skills and abilities (KSA's) of the civilian workforce were seen as inextricably linked with both the goals of maintaining a qualified workforce and the goal of maximizing the productivity of the workforce. Many of the ideas suggested in the research-level interviews involve the issue of structured training and career paths, the need to develop managerial skills (seen as contributing to a higher level of productivity) and the need to tie training more closely to career advancement.

Phase I: Establish baseline measures for training and development. Specific research questions in the baseline area were:

1. Develop linked measures for individual and organizational productivity
2. Assess the current level and patterns of mobility.

Although there is an assumption that individual productivity contributes directly to organizational productivity, the nature of the relationship between the two variables has yet to be clearly established. Hence, basic research was suggested to develop and link measures of individual and organizational productivity. The issue of measuring individual productivity is of much concern. Civilian personnel within the Army are responsible for a wide range of tasks. Few standards for ascertaining optimum levels of productivity for individual tasks have been established, although there have been extensive job analyses in some occupational series. Successful development of appropriate measures of productivity at both the individual and organizational levels is necessary to the development of standards as well as to the measurement of the effectiveness of training and other productivity improvement efforts.

Another potential area of concern is the relationship between job or geographical mobility and productivity. For example, the question arose as to whether or not rotation of personnelists from the field to Headquarters and vice versa would result in higher productivity on both sides. Although

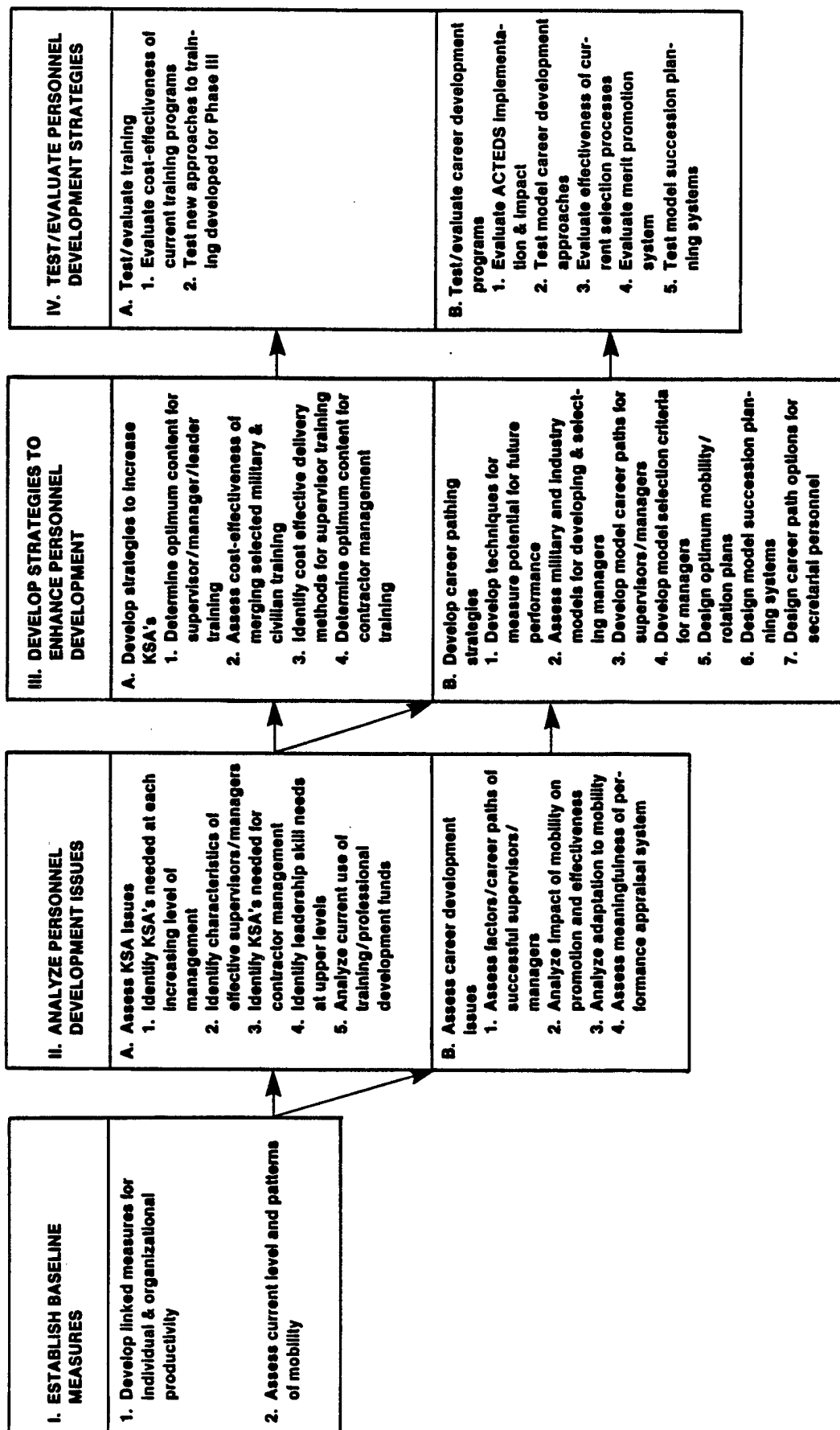


Figure 4. Personnel Development Research Array

there are different skills needed in implementing as opposed to creating policy, it might be that such breadth of experience would lead to greater understanding of system needs and hence individual effectiveness. Research is required to ascertain the level and patterns of mobility throughout the Army civilian personnel arena so that the nature of this phenomena can be assessed and related to productivity.

Phase II: Analyze personnel development issues. This Phase has two research clusters: (a) an assessment of various KSA issues and (b) career development issues.

1. KSA issues: The underlying questions in the first research cluster had to do with identifying requisite KSA's at each level of supervisory responsibility, ascertaining those KSA's which characterized individuals who were perceived as being effective supervisors and managers, and looking at the present use of funds expended in training.

Although interviewees expressed interest in a number of management levels within the personnel system, there was a predominant interest in building developmental skills for first line supervisors who are in transition from a focus on technical proficiency to a demand for managerial competence. There was a concern that many of the management courses used to train former technicians emphasized a mastery of rules, e.g., "how to fire people." What was perceived as needed in such courses was the development of skills in such areas as: interpersonal relationships, the presentation of formal briefings, delegation of responsibility, and the conduct of internal review and analysis. Needed skills must be identified and validated before they can be taught, and there are not agreed-upon KSA's for different management levels.

One suggested approach to identifying such capabilities was to ascertain, within specific Army organizations, both the KSA's and individual characteristics possessed by individuals who were considered by both their peers and subordinates to be exemplary supervisors or managers in an Army-specific rather than general context. Interviewees indicated that KSA's needed to be identified for the task of contract management, given that a higher level of "contracting-out" activities demand an increased need for skilled individuals to supervise contractors. Current contract management courses were perceived as being too limited, concentrating on a knowledge of regulations, without enabling individuals to acquire the wider range of needed skills for this type of management.

For upper levels of management, research was needed to ascertain the leadership skills which civilians should acquire, particularly at a GM 14 and 15 level. One suggestion was that a model analogous to the Federal Executive Institute be created for individuals below the SES level to train them in those identified leadership skills in an environment removed from the job site. A related issue was the need to systematically identify how funds were being spent in the area of professional development and training so that a determination could be made on the return on investment for the Army as an organization.

2. Career development issues: Interviewees expressed concern with civilian and military personnel issues, specifically that the civilian personnel workforce as a whole lacked clear-cut and structured career paths or ladders. Although the Army has a number of career programs, they are targeted to specific grades and occupational series. By contrast, the military was described as having a series of well-defined paths so that individuals can make informed choices about professional development and can predict the type and amount of training needed to reach their career goals. Research ideas fell into four clusters.

- o Assess initial factors and career paths chosen by successful supervisors and managers
- o Analyze the impact of mobility on promotion and effectiveness
- o Analyze adaptation to mobility
- o Assess functions of performance appraisal system.

One suggestion was to construct possible career paths. The first step was to describe and analyze the ways that high-ranking and successful Army civilian supervisors and managers had arrived at their positions. Patterns of career pathing that emerged from such an analysis might provide a base for constructing models for younger employees.

A second research concept would describe the impact that job rotation and mobility has on subsequent promotion and on the effectiveness of the individual. This need was identified by both high-level managers and lower-graded employees. Some managers perceived a need for greater rotation to enhance leadership potential. Some employees were more skeptical of the "pay-offs" of rotation and mobility, indicating that they are encouraged to attain a breadth of experience which may or may not be necessary for career goals.

A related concern is to find out how well individuals accommodate to mobility by examining the adjustment of individuals who have experienced frequent job and geographical changes. The findings could be fed back to the less mobile workforce. Such data would shed input on the larger question of how individuals can accommodate a career system that may demand a degree of mobility, and successfully balance personal and organizational needs. It may be that there are "natural" times in the individual and family life cycle when employees are more able and more willing to relocate, such as when a youngest child has left home (as opposed to a child's last year in high school). Not only would these research results potentially be of interest to employees in thinking about their own career paths, they might also prove useful to career program managers responsible for planning career paths.

A concern about the performance appraisal system was raised by a large number of interviewees. Most of them were responding to the appraisal system in place in winter of 1985-1986, rather than the shortened form now available. One suggestion was to look at how performance appraisals could

be more effectively used, not as a measure of past performance, but as a "measure of potential for the future," and as a way of guiding and structuring future career plans for individuals.

Phase III: Develop personnel development strategies. Based on the various research issues identified for personnel development discussed above, strategies to increase or enhance individual personnel development would include the following.

1. Training strategies for KSAs:

- o Determination of optimum content for supervisor/manager/leader training;
- o Assessment of the cost-effectiveness of merging selected aspects of military and civilian training;
- o Identification of cost-effective delivery methods for training, especially at the supervisor/manager level; and
- o Determination of training needed for contract negotiation and monitoring.

Phase III research would devise training opportunities to ensure the acquisition of skills and abilities associated with effective managers in the Army. Similar contract management training strategies would also be needed based on the KSA's and performance deficiencies identified.

Because a number of individuals perceived the military's education and training system as being useful for civilians, a few interviewees suggested exploring the feasibility of converging selected civilian and military training programs. An example was the need for Department of the Army civilian instructors to be trained by an already-established military system; in those situations in which the same skill progression is needed for both military and civilians, it would be useful to look at the cost-effectiveness of merging what are now different training paths. Interviewees suggested that the "charm school" offered by the Army's protocol office and attended by general officers would be useful for new SES personnel.

Training methods used by civilians are now heterogeneous. One interviewee commented that "A supermarket approach is still used for the most part in civilian training. Managers select off-the-shelf courses which look good." Interviewees suggested research to establish cost-effective methods of delivering training, particularly to large numbers of trainees from different sites (e.g., supervisors). The research would analyze trade-offs in using video, off-site training, or correspondence courses. Training methods used in private industry would also be analyzed.

2. Career development strategies: Following Phase II career development issues, a number of strategies were suggested to contribute to a

more well-defined and structured pattern of civilian personnel advancement. Such strategies would include:

- o Developing techniques to measure supervisory/managerial potential for future performance, and examining criteria used by other organizations such as the Center for Creative Leadership
- o Assessing both military and industry models currently in use for developing and selecting managers
- o Developing model career paths for supervision and management positions which might include required assignments
- o Developing model selection criteria for managers, as opposed to randomly selecting individuals who "pop into or ooze into" supervisory positions from technical backgrounds
- o Designing mobility and rotation plans with clear pay-offs for employees
- o Designing model succession planning systems using software systems
- o Designing career path options for low-grade secretaries, stenographers and clerk-typists who are frustrated with spending their entire careers in GS-6 grades based on the nature of the job standards and descriptions.

Phase IV: Test and evaluate personnel development strategies. A number of evaluation activities were mentioned by interviews, while others are logical follow-ups to strategies suggested in the previous research phase.

1. Test and evaluate training to increase personnel development. It was pointed out to interviewers that it was extremely difficult for Army personnel to delineate what, if any, effects training has on the productivity level or skills acquisition of employees. Except in cases where, at least perceptually, the Army trains them and "they leave to go work for IBM", it is difficult to show the impact of training on participants who remain within the Army. Therefore, any new training strategies developed should be evaluated in terms of cost-effectiveness, both to the individual participating and to the organization to which they return with new KSA's.

2. Test and evaluate career development programs. Several participants mentioned a need to evaluate the implementation and impact of the new Army Civilian Training and Educational Development System (ACTEDS). In particular, the emphasis placed on mobility, both geographical and occupational, is perceived to be causing concern. Individuals who are unable or reluctant to enter into mobility agreements are concerned that promotions will be based solely on mobility. ACTEDS thus provides an arena in which to evaluate the benefit of mandatory movement to the Army.

Other possible testing and evaluation projects would include testing model career development approaches, evaluating effectiveness of current selection processes, evaluating the merit promotion system in terms of its acceptability to civilian personnel, and testing model succession planning systems once they are developed.

In summary, the Roadmap identified civilian management objectives and a series of potential research endeavors to further those objectives. Our work builds on the Roadmap information. In FY88, we employ analytic techniques to identify those Roadmap research tasks whose products would be most beneficial to the Army civilian personnel function. We also gather the data needed to define these tasks in the detail necessary to support the development of specific products.

Army Prioritization Project

Oak Ridge Associated Universities (ORAU) and ARI completed two reports, Establishing Priorities for Civilian Personnel Management Research in the Army (Clark, Sweeney, and Savell, 1987) and Making Decisions about Civilian Personnel Management Research in the Army: Part 2 of the Army Roadmap (Clark and Savell, 1987). The first assigned priorities to 16 research problems (stated in 16 questions designated Q1 through Q16) that were based on the research areas in the Roadmap. Table 1 shows the relationship of the 16 ORAU questions to the eight Roadmap areas.

The recruitment research area in the Roadmap entailed both the problem of attracting candidates and selecting them. The ORAU questions elaborated the problem by including attraction of high-quality candidates, selecting candidates, insuring that selected candidates are hired, and identifying candidates for supervisory and managerial positions. The last (Q9) also related to the area of personnel development, because candidates for supervisory and managerial positions are, in some cases, selected within the Army civilian personnel workforce rather than from outside. Thus, Table 1 shows both Candidate Selection and Management Training for Q9.

The Personnel Development area in the ORAU work (the area that corresponds most closely with Management Training) contained three questions in addition to Q9. One question (Q10) pertained to the development of supervisory, managerial, and leadership skills. The other two questions comprised the assessment of employee performance (Q7) and the assessment of supervisor and manager performance (Q11). A critical consideration in logical development of a research plan is that the assessment goals must be reached before the selection or training goals can be adequately addressed.

ORAU distributed a questionnaire to key individuals throughout the Army asking each to rate the 16 questions (problems) on three dimensions:

1. Value of improving things in the area (expressed in the question)
2. Seriousness of the consequences of not improving things

Table 1 — Priority Ratings¹ for ORAU² Questions and Their Relationship to Roadmap Research Areas

Prioritization Project Questions	Roadmap Research Area
TOP PRIORITY	
Q4³ Retaining productive employees	2⁴ Retention/Separation
Q1 Attracting high quality candidates for Army jobs	1 Recruitment
Q9 Identifying good candidates for supervisory and managerial positions	1 Recruitment & 3 Personnel Development
Q10 Developing supervisory, managerial, and leadership skills	3 Personnel Development
MIDDLE PRIORITY	
Q8 Enhancing individual productivity	4 Motivational Productivity
Q5 Separating poorly performing employees	2 Retention/Separation
Q2 Selecting candidates who have potential for high performance from the pool of qualified applicants	1 Recruitment
Q11 Assessing the performance of supervisors and managers	3 Personnel Development
Q12 Increasing the effectiveness, productivity, and image of civilian personnel offices	6 Civilian Functions
Q13 Building effective military/civilian relations	7 Military/Civilian Relations
Q7 Assessing employee performance	3 Personnel Development
LOWEST PRIORITY	
Q6 Dealing with the impact of mission changes on the workforce	2 Retention/Separation
Q15 Determining appropriate functions for civilian employees in peacetime and during mobilization	6 Civilian Functions
Q3 Making sure that candidates who are selected actually get hired	1 Recruitment
Q16 Forecasting long-term requirements for the Army civilian workforce	8 Future Civilian Workforce Needs
Q14 Developing strategies for improving organizational effectiveness	5 Organizational Productivity

¹Priorities are based on unweighted composite scores.

²Oak Ridge Associated Universities

³ORAU Question Numbers

⁴Numbers for Research Areas come from Figure 2.

3. Likelihood that research findings would be used.

Unweighted composite scores indicated a three level hierarchy of top priority, middle priority and lowest priority. Table 1 presents the priorities of the questions. Of pertinence to this research is the finding that management selection and training issues were deemed top priority.

The second stage provided decision-makers and researchers with a tool for assessing the general nature and magnitude of work necessary for improving Army civilian personnel management. ORAU defined three research tasks within each of the questions of key importance to this contract (Q2, Q9, and Q10). We will consider those research tasks carefully as we develop our research plan for this contract, and will also consider the ORAU tasks developed within the personnel assessment questions (Q7 and Q11). We will, however, use information other than, and more recent than, the ORAU reports to develop our final plan.

The ORAU analysis considered:

1. Interrelationships among research activities (the research tasks, such as the three tasks within Q2, Q9, and Q10)
2. Preliminary research required (e.g., assessments in Q7 and Q11)
3. Estimates of personnel and time resources needed.

Thus, the prioritization reports describe additional details of the research tasks presented in the Roadmap. They also provided information on the perceived importance of various Roadmap research activities and the amount of effort each may require to be accomplished. However, they did not integrate this information to derive cost/benefit recommendations for research (Clark and Savell, 1987, p. 17). Our research begins where the prioritization project ends. We employ analytic techniques to integrate previous research results to focus research on projects that yield the greatest cost/benefit to the Army civilian personnel system.

Civilian Personnel Modernization Project Report

This work (Department of the Army, 1987a) is action- rather than research-oriented. It was written in response to a Department of the Army Inspector General (DAIG) report that identified major systemic problems in the civilian personnel area. Two problems concerned the leadership of civilians and the complexity of the personnel system itself. The report identified long and short term actions to address the recurring problems such as classification and compensation, employment and promotion, performance management, career development and training, leadership and central support. Most of the recommendations were policy-oriented, not research-oriented. The recommendations relevant to this contract are the actions to be taken in training of civilian managers and supervisors, and employee career development.

Professional Development of Supervisor's Study (PDS²)

The Army has identified selection, training and development of first-line supervisors as an important concern. Therefore, the Professional Development of Supervisor's Study (PDS²) (Department of the Army, 1987b) provides important background information for this contract. PDS² is an Army-wide effort to determine the best approaches for selecting and developing first-line civilian supervisors. PDS² is being conducted in three phases. Phase 1 gathered information about the job of first-line supervisors, the ideal personal characteristics of first-line supervisors, and the process whereby first-line supervisors are selected and trained. Phase 2 consolidates the results of Phase 1. Phase 3 implements improvements in the selection and development of first-line supervisors based on the findings of Phases 1 and 2.

Phase 1 had three parts. The first part determined the procedures used to select and develop civilian first-line supervisors. This part was completed by the Atlanta Field Office, U.S. Army Civilian Personnel Center, Office of the Deputy Chief of Staff for Personnel (ODCSPER) (Department of Army, 1987).

The second part gathered job information to improve the selection of first-line supervisors. A concern for the Army is that those individuals responsible for the selection of first-line supervisors may not be using the most appropriate criteria in making their selection decisions. A job analysis was needed to identify supervisory selection criteria (i.e., knowledges, skills, abilities and other characteristics [KSAOs] that supervisors must possess to perform their supervisory tasks effectively). The job of the first-line supervisor requires both supervisory and technical KSAOs. HumRRO International, Inc., recently completed this job analysis of first-line supervisor jobs (Rosenthal, et al., in preparation). These data are useful for all future research activities on first-line supervisors in the Army civilian personnel system.

Part three identified ideal characteristics and traits of civilian first-line supervisors and recommended methods for developing them in job incumbents (Camera, et al., 1987). Data from that project are relevant to training and development research for first-line supervisors.

In Phase 2, the Army is integrating the three parts of Phase 1; a report is expected in the spring of 1988. Phase 3 is key to the work in this contract. Using the data gathered for the job analysis under Phase 1, we will establish linkages between specific job tasks and KSAOs. We will develop criteria for first-line supervisor selection and create selection materials. Subsequent research can provide training and development programs for first-line supervisors.

Summary

This background chapter provides the reader with descriptions of important reports that are relevant to the research activities in this

contract. Consistent with the goals and philosophy of the program of research, FY88 research activities build upon prior work. The Roadmap and the Army prioritization efforts provide data essential for completion of the research activities. The Roadmap provides the basis for the research problem definition, specification, and planning during FY88. The prioritization reports provide data needed for cost/benefit decisions about the research problems to address in subsequent years in this contract. Finally, a number of current and past projects are directly relevant to and provide input to potential research to improve Army civilian personnel procedures. PDS² particularly will provide a major focus for many of the research activities concerned with first-line supervisors.

The Army has a wealth of information on civilian personnel functions and problems. What is needed is a way to integrate this information and to derive a defensible problem-definition and action plan. The Technical Approach chapter presents our procedures for such a method.

TECHNICAL APPROACH FOR PERSONNEL MEASURES

Conceptual Approach

We organized our technical approach around key concepts based on the research objectives stated in the Introduction and Background chapters. These concepts relate to our concern for developing a systematic approach to selecting problem areas to investigate, selecting suitable research methods to address the problem areas, and matching the total scope to the resources available to conduct the research. The key concepts, and their implications for the scientific methods we must employ, are:

1. Establish the conceptual context in which to focus the research goals: Thus, we need a systematic view of the army civilian personnel system, within which the problems exist, and the functions that determine the priorities.
2. Avoid redundant research efforts by determining what knowledge is already available to the army for the civilian personnel function: Thus, we need to develop a taxonomy of existing data bases.
3. Narrow the program focus based on the priorities of DCP and its constituents: Thus, we need a method to consolidate existing knowledge with DCP priorities.
4. Refine research tasks through detailed analyses of the sponsor (DCP and constituent) needs: Thus, we need empirical data concerning the nature and severity of the problems.
5. Select the research to be conducted based on the relative cost/benefit to the Army: Thus, we need a logical, quantifiable method to select problems to address in the subsequent years of the contract, and we need estimates of the relative costs and benefits of the research.

The objectives, key concepts, and research needs indicate the need for a multidisciplinary approach that exploits systems analytic and empirical research techniques. These concepts will guide the work over the life of the contract. They will insure that the best possible science is harnessed to produce the most useful products for the Army. This strategic planning process will create an integrated program of research, with each project drawing direction from and providing input to a common planning process.

Overview

The overall purpose of the Personnel Measures Project during the first contract year is to focus the contract resources on a set of problem areas most cost-beneficial to the Army. Projects selected during that focus will be completed during the ensuing years of the contract. The Personnel Measures Project has four tasks in FY88:

1. Conceptualize Army civilian personnel management problems, through analysis of the system and its functions
2. Determine what information is available (relevant measures, data bases and results from previous research)
3. Conduct a preliminary cost/benefit analysis on the utility of various research options to focus on specific problem areas
4. Select research projects (and topics within them) to conduct during the remaining contract years.

Figure 5 displays the tasks and their interactions. The systems analysis (Task 1) defines the important variables and their relationships to each other. Three tasks will be conducted simultaneously and will be closely integrated to provide data needed for the cost/benefit analysis on the utility of conducting research in various problem areas. The information survey (Task 2) assesses the data bases and the data available in them. The existing literature information is consolidated in the preliminary cost/benefit analysis (Task 3). In Task 4 we collect additional data concerning the problems and research topics. Finally, we consolidate this information in a research plan that describes the Personnel Measures, Candidate Selection, and Management Training and Development activities in detail for FY89 and in general for all remaining years.

Systems Analysis and Its Role in the Research

In Task 1, we use systems analysis techniques to:

1. Integrate previous research (e.g., linkages of Roadmap and prioritization reports)
2. Identify the system-wide impact of a particular research project
3. Provide the top-level view for sampling plans.

The requirements for research must be derived specifically from the functions and needs of the Army civilian personnel decision makers. To develop a successful aid to decision making, we must know who the decision makers are, what specific problems they face, what information they have, and what functions they must perform.

The objectives of this research require a conceptualization of the decision-making and their functions, employing a top-down systems analytic approach. The results of the analysis are shown in diagrams that present a rigorous, organized view of the system, functions, and problem areas. The systems analysis enables us to select research methods targeted to specific problems within the system, to devise pertinent interview questions, to focus selection of interviewees, and to identify other data needs. The

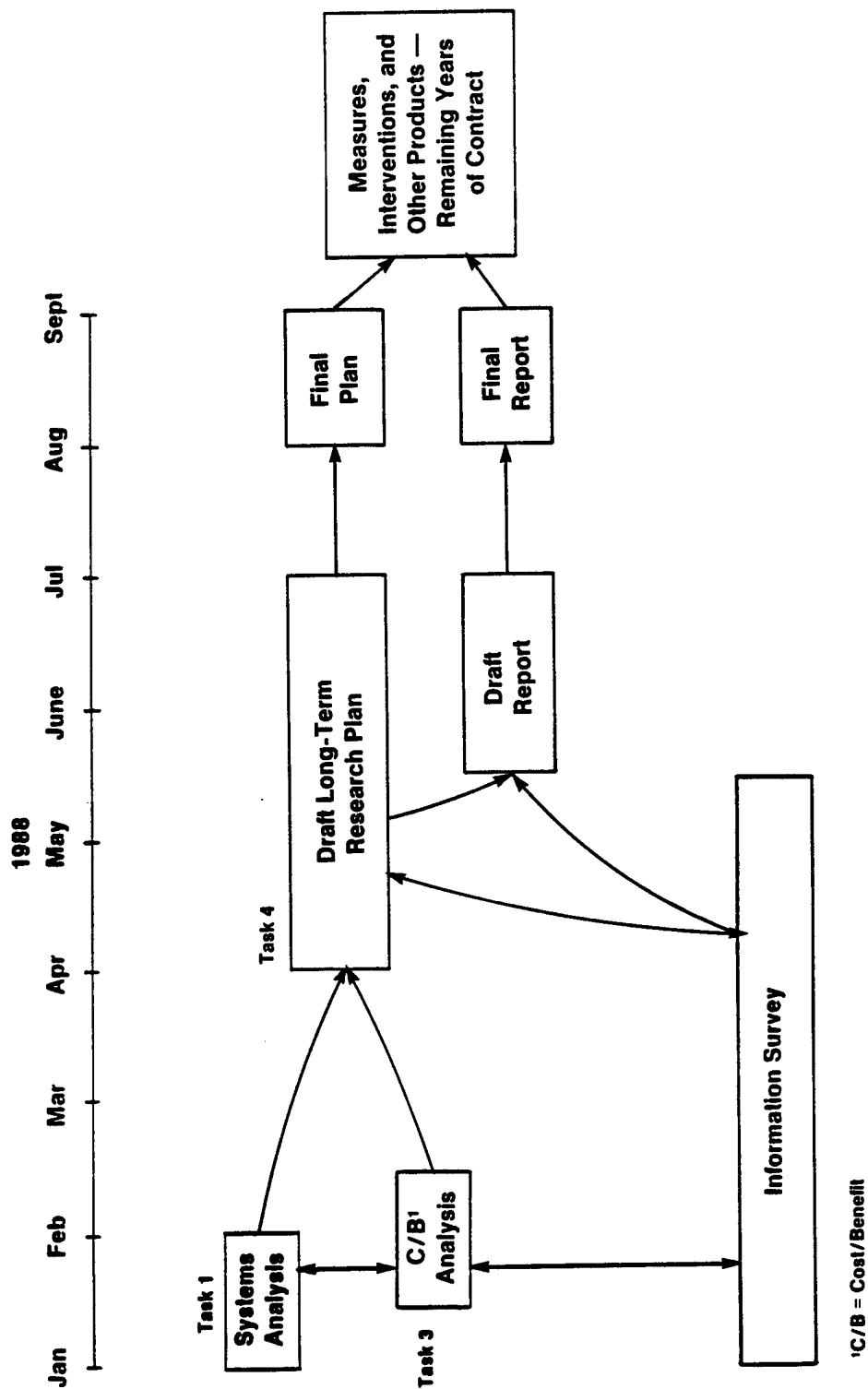


Figure 5 — FY88 Overview of Personnel Measures Project

analysis compiles a wealth of existing information into a coherent picture. In this way the systems analysis drives interviews and other data assessments.

Our first task for this fiscal year provided a demonstration of the analytic technique and a demonstration of its application to the Army civilian personnel management system. An initial description was prepared from our current documentation and general knowledge. It serves as a guide during the first year of the work, and illustrates the method.

Maximum Use of Existing Research, Data Elements, and Data Base Structures

In Task 2, we will index the Army civilian personnel data sources and the indices will serve multiple purposes. We will assess the range of data needed to meet the Army's civilian personnel objectives by mapping existing data and data sources against information requirements. The results will integrate records (e.g., ACPERS), attitudinal data (e.g., Army-wide survey) and projection data (e.g., CIVFORS) to provide an information tool that is responsive to research needs, Army decision-making needs, and management needs.

This index will also be used in the research of specific personnel topics. By using the index, existing data which bear on particular personnel issues can be identified. In some cases, the index will indicate that little, if any, information exists. In these instances, interviews will be conducted to collect the needed information.

Resource Allocation Method for Cost/Benefit Analyses

A general and powerful Resource Allocation Method (RAM) will form the basis for the cost/benefit analysis to select the research problem areas to address. The goal of RAM is to aid the decision maker in determining whether resources should be allocated to a project; and, if so, the level of resources that would yield the greatest benefit for the cost. This approach is especially useful in designing a system that must satisfy several requirements. The RAM simultaneously weights the costs and benefits of various options. It aids decision making by describing for the decision maker the relative costs and benefits of each option. Task 3 used the RAM to consolidate existing information and focus further research efforts.

The remainder of this chapter presents the technical approach for the Personnel Measures Project, including preparation of the long-range research plan (Task 4).

Task 1: Analyze System to Derive Problem Conceptualization

Rationale and Assumptions

This task sets the conceptual context for the overall contract. As discussed above, our first activity is to select from among the host of potential projects (and topics within those projects) a few specific ones to accomplish in this contract. We assume that the research called for in the contract should improve the ability of the Army civilian personnel system to support the Army and, in turn, to contribute to the nation's national security objectives and operations. Having considered the various approaches available, we concluded that a systems analysis of the national security system provides the best context in which to frame the research effort. Establishing a systems context helps ensure that the selected topics represent the most valuable use of the Army's research dollars. Thus, we used an analytical technique to view the elements of the civilian manpower and personnel systems on which we are working in the context of the larger systems of which they are a part.

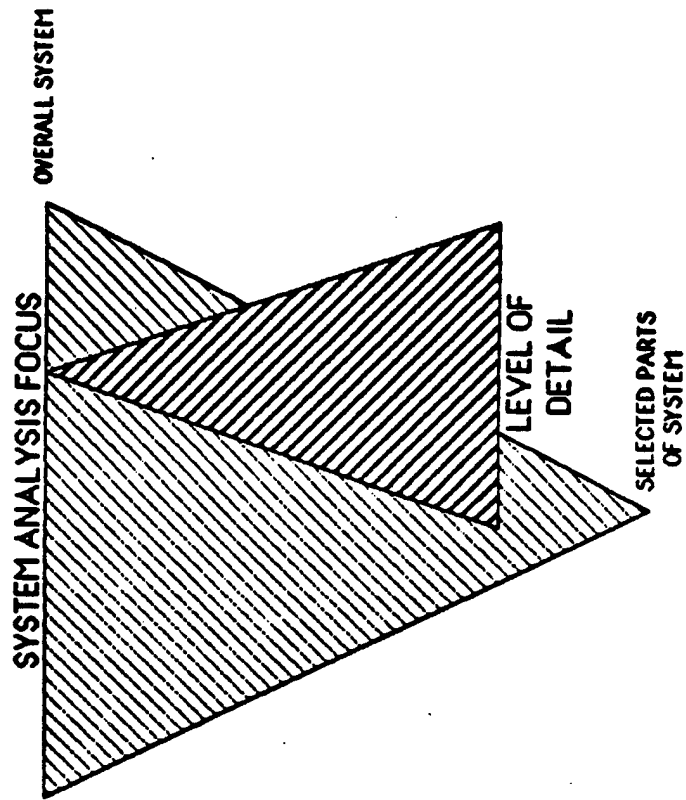
The work for Task 1 is completed. This chapter summarizes our procedure and findings; Appendix A elaborates the method and system diagrams.

Method

We selected a top-down, structured, hierarchical systems analysis method called IDEF. The Integrated Computer-Aided Manufacturing Office (ICAM) developed IDEF (ICAM DEFINition) as a tool to analyze and describe system functions and data (Bachert, Evers, Hoyland, and Rolek, 1982). IDEF structures the analytic process, communicates the results clearly, and provides an audit trail of the analytic steps. This technique requires analysts with functional expertise to decompose an overall system into its component parts focusing on the functional elements of primary relevance to the research being conducted. Figure 6 depicts the initial broad systems overview that decreases in perspective as the systems analysis increases in detail.

We drew on previous research and the expertise of the research staff based on years of experience in various levels of the system to develop a preliminary analytical structure of the national security system. The previous research includes in-depth analyses of the national security system, Defense manpower and personnel systems, the Civil Service System, command and management in DoD and the Army, mobilization, readiness, and other relevant subjects.

In developing our preliminary structure, we decomposed the national security system into its component parts. We focused on the functions that lead to the civilian personnel system and then decomposed that system into its primary elements. For each element in that chain, we developed an IDEF diagram showing all of the subelements that compose that element. Various members of the research team have met in small groups to review, verify, and



AS IDEF PROGRESSES:

- Narrow focus to selected parts of system
- Increase detail as system is decomposed to its component parts

Figure 6. IDEF Goes From the General to the Specific

revise the diagrams. The ARI contracting officer's representative and members of the DCP staff have now reviewed the results. We may use additional small group discussions with those currently at key positions in ARI and the most relevant parts of the Army's civilian personnel system to modify our initial effort to suit particular needs of the Army's civilian personnel function.

The Task 1 analytical structure shows the Army's civilian personnel system in its larger system's context. It permits the research staff and the ultimate users of the research results to examine the elements of the civilian personnel system in the context of the Army's national security functions. During the contract, we will locate each research area and its component research projects in the IDEF analytical structure more clearly identifying the relationships of particular research projects to each other and the impact of each project on other components of the system. The IDEF method used in the analysis and the detailed results of that analysis are described in Appendix A.

Findings

1. Manpower planning is important. There is an apparent discontinuity between the Civilian Personnel Management Research contract as written by DCP/ARI and the findings in the ORAU prioritization reports. The contract statement of work listed manpower planning as 1 of 3 high priority areas but the prioritization results placed it in the lowest priority category. Conceptualizing the civilian personnel management system through the systems analysis, we saw that the manpower planning function was performed outside the civilian personnel system. However, ORAU only polled people working in the civilian personnel system. Therefore, it is not unusual that they did not identify manpower planning as a high priority. When viewed in the context of the National Security System, the IDEF shows that the manpower planning function underlies all of the other analysis and confirms the judgment in the statement of work.

2. Promotion is part of acquisition. The systems analysis also highlights the differences in promotion policy between the civilian and military systems. Promotion in the civilian personnel system is carried out through the acquisition process rather than through maintaining the workforce. This differs greatly from the military system, and this realization may contribute to a better understanding of the retention of first-line supervisors.

3. Do not try to change social norms. The IDEF analysis focuses on quantifiable variables. Some of the Roadmap problems are rooted in social norms in areas such as family considerations or dealing with foreign cultures. This analysis does not address changing those norms, and our research plan does not include such efforts.

4. IDEF result is a useful spin-off of this research. Finally, the IDEF conceptualization of the civilian personnel management system may have value as an end in itself apart from its use in our research. When a

similar analysis was presented to the Industrial College of the Armed Forces, many "green suit" managers found that it furthered their understanding of the civilian personnel system. The Army may want to use these diagrams to help new managers (both civilian and military) understand how the civilian personnel system interacts with the rest of the Army and supports the Army in its national security missions.

Support Requirements

Task 1 essentially is complete. Based on the results of other tasks, further revision may need to be made. Any further support will be minimal.

Potential Problems and Solutions

1. Failure to constrain the process to the appropriate level of analysis. If unconstrained, the conceptual process can consume too large a share of the scarce dollars and research time available. Systems analysis can take on a life of its own. It is important to focus on the parts of the larger system that are relevant to the research scope of the contract and not consume research resources analyzing in detail parts of the system that are not relevant to this contract.

It also is important to resist the temptation to continue decomposing systems to their very lowest element. The process could decompose all the way down to describing how to fill out position requests, personnel forms, and pay checks. We have limited decomposition to the level that permits us to put our research in the proper context. Additional decomposition may be required later in the contract when specific research tasks are selected, but we feel we are now at about the correct level of detail.

2. Failure to accurately reflect the system. There is a danger that the structure might not reflect the system as it currently exists. This IDEF approach depends on the level of expertise and focus of the participants. For this approach to provide the conceptual framework necessary for this research, key personnel from ARI and DCP must and have participated in the process. We encourage review and comment on Appendix A.

3. Failure to communicate information in an easily understood format. At the technical level, there is a potential problem of trying to show everything on one diagram. As a general rule, there must be at least two and should be no more than six functions (boxes) shown on any decomposition. If there is too much detail, the analyst needs to consolidate functions, inputs, outputs, controls, and mechanisms so that the diagrams are easy to read and understand. Subsequent decompositions can provide additional detail if needed, but on a smaller part of the system.

Task 2: Survey Information Sources and Data

Rationale and Assumptions

Manpower and personnel information represent the analytical building blocks needed for the research being considered under this contract. This task addresses the data sources now available, their adequacy for the research being contemplated, and what improvements or enhancements may be needed before specific research projects are undertaken. We will develop a data index to catalog relevant data sources and requirements information.

We assume that this work requires a process that interacts with the other tasks. The integrative process begins with a review of available Army personnel data sources and becomes more specific as general research projects are focused into specific research topics. We further assume that Task 2 analysis must fit into the overall Army manpower context described in Task 1, must integrate with the problems and topics identified in Task 4, and contribute to the cost/benefit analyses and research topic selections that take place in Task 3.

Method

The goal of Task 2 is to identify and assess the validity (a data source or element that is reasonably available, accurate, reliable, feasible, acceptable to the user, and relevant is considered valid) of available Army civilian personnel information systems and measures. This Task has three subtasks: Subtask 2.1 documents existing data sources as they may apply to the research to be conducted during the life of this contract; Subtask 2.2 assesses the validity of existing data sources; and Subtask 2.3 outlines potential enhancements and new data sources. In the first two Subtasks, we examine existing data sources to determine if they provide the information required to conduct research in the various personnel management areas identified initially by DCP. Subsequent research will be conducted in the personnel management areas identified in Task 4. Subtask 2.3 addresses the development of data sources to fill voids revealed in the first two tasks. These subtasks are discussed in their respective subsections.

To perform the analysis for Task 2, we conduct the following six steps. Steps 1-4 produce a data index that we will use in Steps 5 and 6. Steps 3-6 are repeated each time a research project/topic is broken down into more detail.

1. Identify potential data sources that could serve each research project. The initial research projects are Candidate Selection and Management Training and Development. (This step is discussed in detail under Subtask 2.1.)

2. Determine the type and quality of the current data. This step includes analysis of validity of the data source, frequency of update,

verification methods, and limitations, etc. We estimate the validity of the data sources in conjunction with ARI and DCP. (Subtask 2.2 describes steps 2-4 in more detail.)

3. Determine the information requirements necessary to explore and analyze each research project. As we divide research projects into specific research topics as a result of the cost-benefit analysis and the Task 4 interviews, information requirements in the data index become more detailed.

4. Evaluate the ability of existing sources to meet specific information requirements of individual topics. In this step, the data sources in the data index become more selective and more specific. This step includes determining degree of fit, cost, and potential limitations or problems.

5. Determine potential enhancements of existing data to improve usefulness. Not all data have a perfect fit but may require some minor modifications. This step assesses the cost, timeliness, and benefit of such action. (Steps 5 and 6 are described in Subtask 2.3).

6. Determine potential new data sources needed to meet information requirements when existing data do not satisfy those requirements. Again we include cost, timeliness, and benefit of such action.

The Army Civilian Personnel Management Data Index

To perform the six steps described above, the research team is developing a data index that allows us to catalog the necessary data elements and their descriptions. We organize the data index into four levels of detail with each level providing greater detail. That is, as we move from level to level we move from the general to the specific. Figure 7 illustrates the index. The index structures our approach to the data needs of each research problem.

Level 0. The initial level, or level 0, is the most general and simply describes the data sources. It is a single automated file of data (consisting of several hard copy pages) that lists each data source, identifies its capabilities and functions, and describes its data elements. A short note indicates whether the data source is automated or manual, what other data source it connects to and what its update frequency is. The next section presents the first draft of this Level 0 data file.

Level 1. The first level of the index links the available data sources to research projects. This level includes a separate automated sheet for each research project. As Figure 8 shows, each sheet identifies the research project and each of the major requirements necessary to analyze that research project. We list these requirements across the top of the sheet. We list the data sources and appropriate data elements that could meet the information requirements down the left margin. For example, for the Candidate Selection Project, the Level 1 sheet lists down the left side of the sheet those data bases that contained data elements that were pertinent to selection.

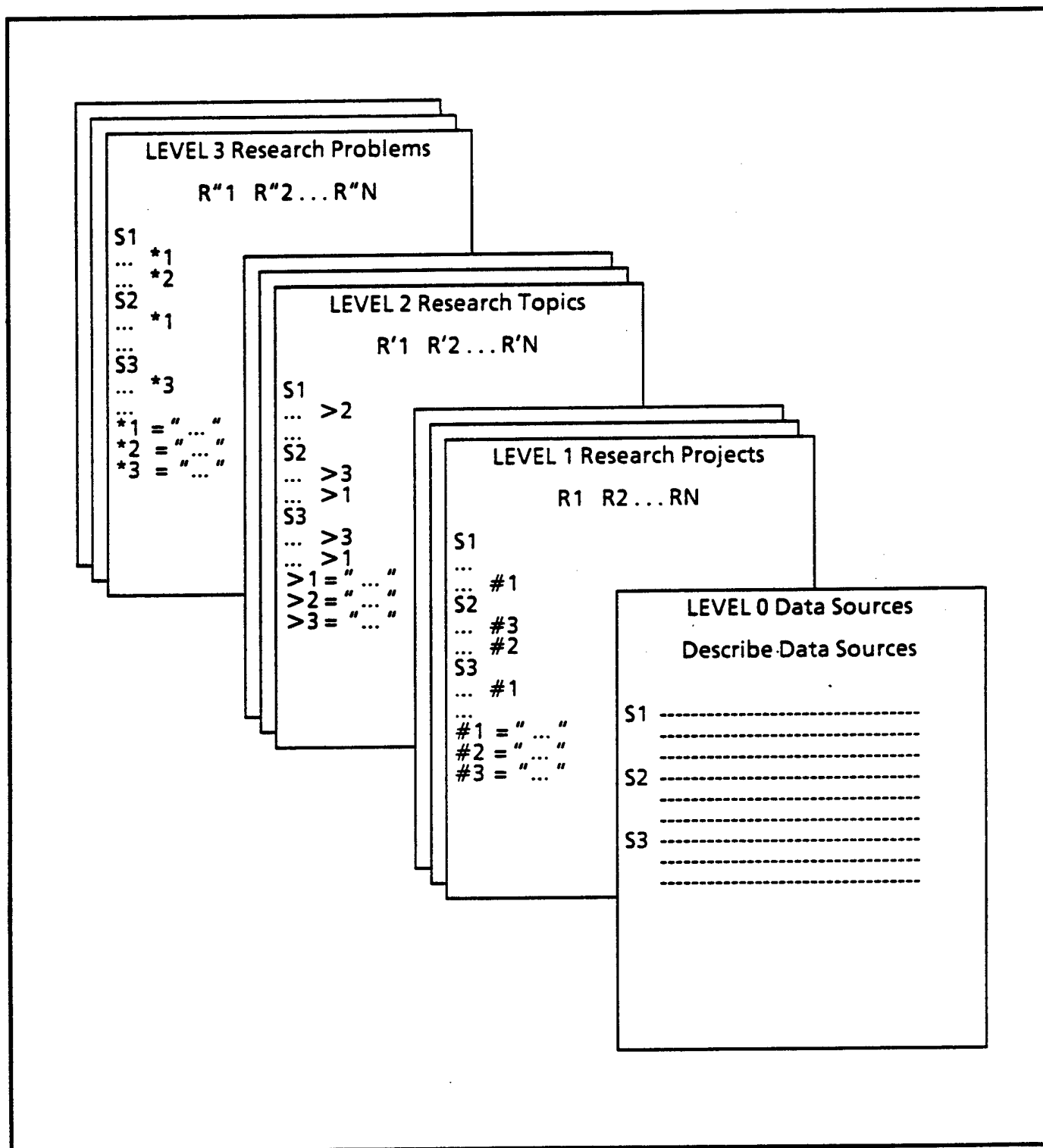


Figure 7. Civilian Personnel Data Index

ARI CIVPERS-CONTRACT DATA INDEX

LEVEL 1 RESEARCH PROJECT: A. _____

DATA SOURCES	INFORMATION REQUIREMENTS			
	R1:	R2:	R3:	...
S1 a b c . . .	#1 #3 #15		#1	
S3 a b c . . .	#7 #9 #1		#8 #1	
S8 a b c . . .		#15 #2		
...				

DESCRIPTION:

#1 Element Name. Description, use, limitations, etc.

#2 Element Name. _____

...

Figure 8. Data Index, Level 1 Research Areas

At the intersection of a given information requirement and an available data element, a graphically-coded box indicates the status and availability of the data. A thin single-line box indicates that the data are in good shape and can be used in this research project as they now exist. A double-line box indicates caution. Although the data may be fairly complete, they may require some modification before using. A heavy solid-line box indicates that although the data are available, a substantial amount of work is necessary before they are complete enough to use. A blank indicates that we have found no data in this source that serves this requirement.

Each coded box also contains a number that identifies a specific type of data. All data of that type on this sheet have the same number. For example, if "1" stands for the Social Security Number of an employee in one data source, a "1" in any other data source will also mean Social Security Number. Additional descriptions of the data and their limitations are shown following the matrix.

Figure 9 illustrates how the data index integrates with the cost/benefit analysis in Task 3, the research planning in Task 4, and the final research products. Based on the cost/benefit analysis conducted using Level 1 information, the project staff (as part of Task 3 and in conjunction with ARI and DCP), narrowed the scope of the research. Selected research projects will be broken into specific research topics (research topic is a subset of research project). For example, selection of first-line supervisors is a topic within the Candidate Selection Project.

Level 2. We will examine these research topics, develop specific information requirements based on a problem, and match available data sources to them. For example, the first research topic to be addressed is the selection of first-line supervisors. Therefore, the information requirements for the research topic "first-line supervisors" should at least include any information that contributes to analyzing the problem of selecting first-line supervisors. As in Level 1, each of the selected topics will be reflected on a separate sheet. For each research topic, we will list its information requirements across the top of the sheet (note that these will necessarily be more specific than Level 1); and we will list data sources by element down the left margin. We will again use the method described for Level 1 (Figure 9) for identifying and describing intersections of available data with data requirements.

Level 3. Ultimately, we will develop a Level 3 to the index. Level 3 will reflect the information requirements for research on selected problems. The analysis of the data quality and availability will help us select research topics and design approaches.

We will develop a separate Level 3 data sheet for each task of each topic we research. Again we will list the specific information requirements across the top and the appropriate data sources by element down the left margin. The same coded boxes and numbers will be used to reflect the status of the available data. We will use Level 3 to manage data needs for the specific research conducted during the remaining years of the contract.

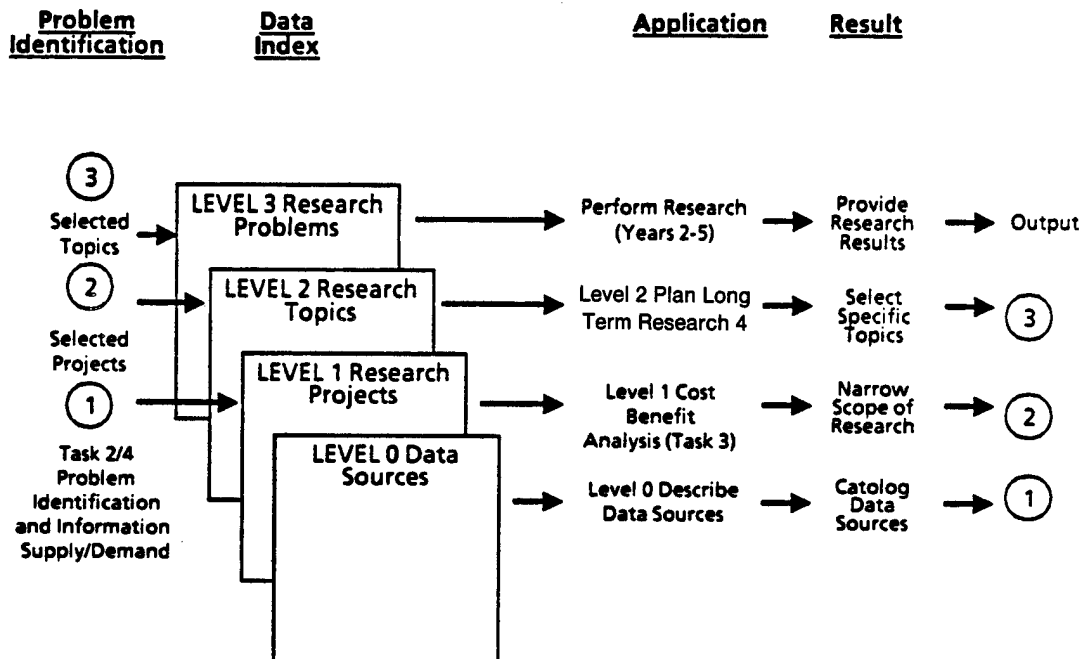


Figure 9. Use of data index.

This system of indexing gives us a structured catalog of information that we can quickly and easily access for conducting cost/benefit analysis and the research required by this contract. The index also provides a basis for efficiently managing other data source improvements and supporting research outside the scope of this contract.

Potential Data Sources

To solve the problems addressed in this contract requires valid and useful data. We use existing data bases to the extent possible to minimize research cost required to perform work under the contract. Previous research indicates a number of areas that serve as a preliminary guide in our data source analysis. Through preliminary review, we identified potential sources of immediately available data. These sources are described in the Level 0 data index shown in Figure 10. An example of one of these sources is the army-wide attitude survey conducted every two years for the last ten years. The data are currently in the form of five separate nine-track tapes, each one containing the results of an independent (although similar) survey. As the data exist, they are of limited use since there is no real longitudinal link. However, we can take the following steps to develop a useful data set:

1. Consolidate the five tapes into one data base;
2. Establish longitudinal links across the five survey data bases;
3. Process the data base to facilitate analysis;
4. Assess the validity of the responses against criteria in Subtask 2.2;
5. Evaluate the statistical difference between respondent populations (if the populations are statistically the same then the surveys can be loosely linked longitudinally);
6. Conduct regression analysis to determine mathematical relationship between attitudes and some agreed upon surrogate for performance (e.g. length of time as a supervisor).
7. Determine statistical relationship between the demographic characteristics of the respondents and performance.

By measuring the relationship of attitudes to performance, we can determine what attitudes may be indicative of improved performance. In the initial task of researching the selection of first line supervisors, these relationships can be used to develop non-quantifiable selection criteria.

ARI CIVPERS-CONTRACT DATA INDEX LEVEL 0		
INDEX SOURCE NUMBER	DATA DESCRIPTION	DATA MANAGER
S1	<p>Civilian Personnel Information System (CIVPERSINS) - a centrally maintained data base which uses 90 data elements to classify and record current status of all individual civilian Army employees; originally designed and implemented in 1970 to support strength accounting, this data base is the by-product of installation level systems and is updated semimonthly; data includes information on academic discipline and data of degree, occupational series, location, grade and step, salary, scheduled hours, amount and date of most recent merit pay and/or cash award, as well as a number of other potentially useful data elements; this data base maintains no history of transactions; CIVPERSINS directly supplies input to SAX, CTF, and Report Master File.</p>	<p>Mr. Lipscomb 325-9012</p> <p>Mr. Fenton 325-9012</p>
S2	<p>Civilian Personnel Master File (CPMF) - a centrally maintained data base using 73 data elements most of which appear to be drawn and updated from CIVPERSINS; this data base, however, includes additional information regarding employee agency and bureau, census region and district, and latest performance appraisal - each of which may prove to be pertinent and useful; this data base contains no history of transactions except for the nature of action of the most recent transaction. (As a substitute we will be using the DMDC master file.)</p>	<p>Mr. Dove DMDC</p>

Figure 10. Data Index, Level 0 (Continued)

ARI CIVPERS-CONTRACT DATA INDEX LEVEL 0		
INDEX SOURCE NUMBER	DATA DESCRIPTION	DATA MANAGER
S3	Civilian Training File (CTF) - records training for individuals of 4 or more hours; creates record when training transaction is received by CIVPERSINS; records retained for two years.	Mr. Lipscomb 325-9012
S4	Nonappropriated Fund Personnel System (NAFS) - designed in 1976 as stand-alone system; no interaction with CIVPERSINS although updated through same procedures; contains 24 data elements in each record.	Mr. Lipscomb 325-9012
S5	Army Civilian Career Evaluation System (ACCES) - provides automated support for the career referral process by identifying best qualified candidates for position vacancies; maintains geographic availability and referral category data on each employee registered in 15 career programs (civilian personnel, manpower and force management, librarian, EEO, and commissary) administered by CIVPERCEN. Other career programs to be included in the near future are: logistics, supply management, materiel maintenance management, transportation management, communications, and education services. Individuals wishing to participate must submit form to CIVPERCEN through local CPO.	Mr. McFadden ODCSPER-DCP
S6	Wage rates - can obtain tape from DoD Wage Fixing Authority containing data that reflects 134 local area wage rates.	

Figure 10. Data Index, Level 0 (Continued)

ARI CIVPERS-CONTRACT DATA INDEX LEVEL 0		
INDEX SOURCE NUMBER	DATA DESCRIPTION	DATA MANAGER
S7	Commercial Activities System (CAS) - automates the implementation of OMB A-76 procedures to provide cost-benefit analyses for determining whether expenditures will be more cost effectively handled in-house or through contracting to private industry; maintains data base of various cost factors.	
S8	Standard Civilian Personnel Management Information System (SCIPMIS) - maintained locally at the CPO level; contains 150 data elements in each record; implemented in 1976-1977 to provide automated support to installation personnel managers and by-product generation of transactions to satisfy most of the strength accounting requirements of CIVPERSINS.	Mr. Huston 756-5944
S9	Corps of Engineers Management Information System - Personnel Accounting (COEMIS-PA) - division-wide, centralized data base developed and maintained by the U.S. Army Corps of Engineers to meet their own unique reporting requirements; each record contains 140 data elements, approximately 40 of which are not contained in CIVPERSINS; used at the CPO level; generates input to CIVPERSINS.	Mr. Heiser CPO, COE
S10	Civilian Personnel Accounting System (CPAS) - developed by the U.S. Army Management Systems and Support Agency for use by a limited number of CPOs in the Military District of Washington and at Fort Eustis and Fort Sam Houston; number of data elements in each record is limited; generates input to CIVPERSINS.	Ms. Tallock CPO, MDW

Figure 10. Data Index, Level 0 (Continued)

ARI CIVPERS-CONTRACT DATA INDEX LEVEL 0		
INDEX SOURCE NUMBER	DATA DESCRIPTION	DATA MANAGER
S11	Standard Army Civilian Pay System (STARCIPS) - maintained at the CPO level to record cost/compensation data; specific data elements in each individual record are not consistent across installations.	Mr. Cash USAFAO
S12	Army Civilian Personnel System (ACPERS) - data base system not yet delivered; will serve as interface between Vertical Force Development Management Information System (VFDMIS), Standard Financial System (STANFINS), STARCIPS, CIVFORS, and CPMF; will be maintained and utilized centrally.	Mr. Huston 756-5944
S13	Army-Wide Survey of Civilian Personnel - anonymous longitudinal survey administered every two years to sample of supervisors and employees; most questions in survey ask for subjective measures of various elements which could affect individual performance, job satisfaction, and, ultimately employee turnover; results of surveys have yet to be consolidated for use as a meaningful tool in management research.	Mr. Kingsley 695-6717
S14	Civilian Forecasting System (CIVFORS) - automated personnel management system within FORECAST used to project civilian manpower requirements, strength, transactions, and the impact of policy decisions; uses 36 months of historical data for analysis. Still under development.	MAJ Elam 695-3857

Figure 10. Data Index, Level 0 (Concluded)

Subtask 2.1 Identify and Document Existing Data Sources

The documentation of existing data sources begins with interviews of data base managers familiar with the CIVFORS, CIVPERSINS, the Army-wide Questionnaire Survey of Civilian Personnel, and other relevant data bases. For each potential data source, our research staff interview the cognizant data base managers or personnel administrators. In these interviews, we collect information on the existing data, systems capabilities, system costs, and criterion variables. We summarize and organize this information into the data index so that we can use it to assess the validity of potential measures and support future research.

The project staff who conduct this task participated in the systems analysis (Task 1) and the cost/benefit analysis (Task 3). They closely communicate with researchers working on the other tasks to share information and eliminate redundancy. As constituent Army decision makers identify research problems (Task 4), they also identify data sources or potential measures that we should incorporate in the data index.

For most data sources, one can gather additional information through ARI and DCP channels. We already have met with the managers of some of the major data bases. The Director of Information Management for the U.S. Army Civilian Personnel Center can direct us to other appropriate data base managers. We will ask these data base managers to provide specifications on existing data in a particular topic. This material will help us assess the information's suitability for the current project. Additionally, researchers will discuss the data base system's capacity for expansion or modification to suit the needs of the project.

Subtask 2.2 Assess Validity of Existing Data Sources

Data must be valid to be useful. In this situation, valid means that the measure accurately assesses what it is intended to measure. To be valid and useful the measures must be available, reliable, accurate, feasible, and relevant. This section describes each of these criteria and then discusses how they will be applied to evaluate the data sources.

Data must be reasonably available. It is not cost effective to establish information data bases that would be very expensive for the Army to develop and maintain. This effort exploits the data bases that already exist and helps the Army use them more effectively. We also evaluate the cost of creating non-available data that might be needed to assess research topics; however, costs and timeliness may constrain the creation of new data sources. To determine availability we simply match the data elements of the existing data sources with the information requirements for a research project and make a yes/no determination. The data are either available or not.

The data should be accurate, i.e., they reflect the true situation being reported. For example if we use as a data source a clock that is always five minutes slow, then the data read from that clock are never accurate. If that clock was not running at all, then the data would be

precisely accurate twice a day, but not very useful. Accuracy is not necessarily a measure of usefulness. It indicates the degree of precision that is needed. To apply this criterion to the existing data sources, we verify with the data base managers the amount of error checks made and the degree to which data errors are corrected. Data sources with extensive checks provide the most accurate data. Data with little or no error checks are assumed inaccurate. We use a scale of 0 to 3 will be used to quantify accuracy; 3 = 76-100% accurate, 2 = 51-75% accurate, 1 = 26-74% accurate, and 0 = 0-25% accurate.

The data must also be reliable. The same circumstance must be reported the same way every time regardless of the source or mode of measurement. That is, if two different people measure an effect they will both agree; or if the same individual measures an effect on two separate occasions, the result will be the same. A clock that is always five minutes slow is very reliable and may be very useful in measuring time, although never very accurate. To determine reliability we compare data sources that have the same data elements. Any variance observed between the same data element in different data sources can be used as an index of reliability. We use a scale of 0 to 2 to quantify reliability (2 if the data element value is equal to the mean measured across data sources, 1 if the value is within one standard deviation, and 0 if the value is outside one standard deviation).

In addition, potential measures should be feasible. That is, it is possible to collect the data. While measurement of any construct may seem possible, the collection of the data must conform to legislative and regulatory standards, some of which could render the data unobtainable (e.g., the Privacy Act may restrict access to some personal data). We request either whole data files or data extracts from the appropriate government agency for each of the existing data sources. If the data are releasable then they are considered feasible.

The data should also be acceptable to the user, i.e., they should be adequate enough to satisfy the user's needs with respect to a particular research topic. It does no good to measure a particular effect with a set of data, if the data do not allow the users to adequately address their needs. For example, we could measure experience of a civilian worker using overall tenure, but that will not allow the Army to address what job abilities the worker has to make him or her productive. To determine acceptability we require a DCP/ARI assessment of how well a selected data element meets a specific information requirement.

Finally, the measures must be relevant to the particular research topics for this contract. For example, if a training program is implemented at an installation as a remedy to a productivity problem, a relevant measure would use data for that specific installation. A productivity measure based on macro (e.g., DA) level data may be too generalized to be sensitive to the effects of the installation level intervention. In determining if the data from existing data sources are relevant we will again match data elements to information requirements and make a yes/no determination (this determination will require DCP input). Those data elements considered relevant will be included in the analysis if they meet the remaining criteria.

The purpose of the above criteria is to allow us to assess several data sources with the same data element and to choose the best source. First we would determine if the data are both available and relevant. Then if there are no restrictions (the data are feasible), measures of accuracy and reliability will be used to discriminate between data sources. In the case of more than one data source providing equally reliable and accurate data, the source providing the majority of data elements is used.

Subtask 2.3 Outline Potential Data Improvements

For each information requirement at a given level in the data index, we review the data elements that potentially meet that requirement. High-quality data elements on the data index need no improvements. If all of the information requirements are met by high-quality elements, then no improvements are needed and the requirement can be met with existing data at the cost of processing those data.

Questionable data elements need some improvements, and poor-quality ones need substantial enhancement. If there are no data elements listed, then we may need to collect data and develop data bases.

This subtask outlines data enhancement and development requirements and estimates costs of various potential alternatives for input into the research plan for the remainder of the contract.

Support Requirements

To accomplish Task 2 successfully, the Army must provide the following support:

1. Participation of Army data base managers familiar with CIVFORS, CIVPERSINS, the Army-wide Questionnaire Survey of Civilian Personnel, other personnel management data bases, and other potentially helpful data bases.
2. Access to documentation of the existing data, systems capabilities, and systems costs associated with each potential measure.
3. Army personnel managers' confirmation of, or comments on contractor results.

Potential Problems and Solutions

1. Failure to obtain complete and correct information on all potential data sources for research being considered for this contract. The contractor needs to work closely with Army data base managers and Army users of data. Regular access to data and the managers and users of that data constitutes the largest potential problem for Task 2. If the Army meets the support requirements outlined above, we can overcome these problems.

2. Failure to narrow research projects and select specific research topics. This problem may result in developing data indices which are too general to serve the needs of this contract. The cooperative interaction of the staff across tasks will reduce these risks, but ultimately ARI and DCP must make definitive choices for this research effort to achieve its full potential.

Task 3. Conduct Cost/Benefit Analysis of Research Areas

Rationale and Assumptions

Task 3 is largely completed. The problem addressed by the cost/benefit analysis was one of allocation of contract resources to activities that would provide the maximum benefit to the Army. The goals of the cost/benefit analysis were: (a) to specify the factors that should be considered in determining the cost and benefit of conducting research in the areas defined in previous reports; (b) to provide a preliminary screening of the research areas according to the benefit/cost ratios of conducting research in each; and (c) to focus contract resources by eliminating low priority research areas.

The analysis was based on these assumptions: (a) more potential research areas, and topics within them, exist than we can address in this contract; (b) we have a wealth of knowledge about those topics from previous and current research; and (c) existing data provide an information set for selecting among the research topics (i.e., we have a good idea about the kinds of potential solutions and interventions and their relative costs).

Method

We used a general and powerful Resource-Allocation Method (RAM) for the cost/benefit analysis to select the research areas to address in future work under this contract. The goal of RAM is to aid the decision maker in determining whether resources should be allocated to a project; and if so, the level of resources that would yield the greatest benefit for the cost. This approach is especially useful in designing a system that must satisfy several requirements. The RAM simultaneously weights the costs and benefits of various options. In this way it works as an aid to decision making by describing for the decision maker the relative costs and benefits of each option.

The use of RAM as a decision aid is not new. The resource-allocation method has been applied to a wide variety of problems, including the selection of training methods (Donnell, Adelman, & Patterson, 1980; Patterson & Adelman, 1981), the allocation of aircraft to targets (Sticha, Patterson, & Weiss, 1982), and problems of system design (Sticha & Patterson, 1981). Recently the RAM has been used as the basis of a plan for research in the optimization of training-system design (Young, Luster, Stock, Mumaw, & Sticha, 1986), and has provided the basis for methods for optimizing training-device designs (Sticha, Blacksten, Buede, and Cross, 1986).

The following discussion gives a brief description of the method and outlines the procedures followed in the present analysis. A detailed description of the analysis is presented in Appendix B.

The RAM process was conducted in the following steps:

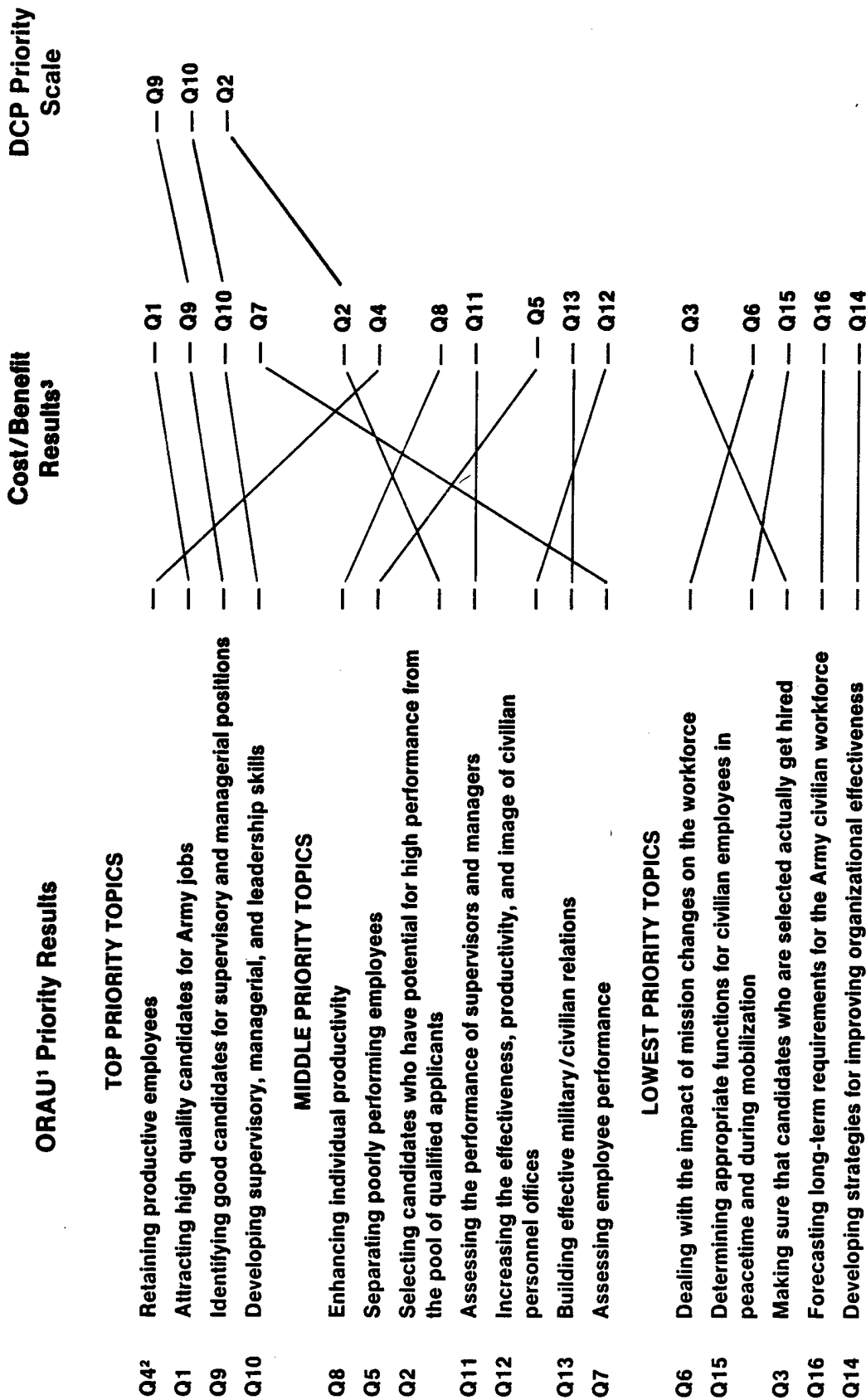
1. Develop model structure. This step identified the requirements that must be satisfied and the levels at which they might be satisfied. The levels were ordered so that each level was both more costly and more beneficial than the previous level. The requirements were the sixteen research projects from the ORAU prioritization reports.

This task considered the sixteen research areas in their entirety, and did not evaluate the cost-effectiveness of doing a portion of the research defined in the area. Consequently, we considered only two levels for each research area. The first level represented not performing the research at all; the second level represented performing all of the research in the area. For example, this first level represented performing all of Q10 "To Develop Supervisory, Managerial, and Leadership Skills" or not performing it at all.

2. Assess costs and benefits. The second step was the assessment of model parameters. Each level was assigned a cost and benefit. The cost information was obtained from the ORAU prioritization reports. We used the ORAU estimates of costs defined as the number of professional months needed to accomplish research tasks within each of the sixteen research areas. The cost estimates assume that none of the prerequisite research has been conducted. Thus the total cost for a question such as Q9 "To Identify Good Candidates for Supervisory and Managerial Positions" includes the cost of performing the prerequisite research addressing other issues, such as Q11 "To Improve the Assessment of Supervisor and Manager Performance." This simplifying assumption counts costs for prerequisite tasks twice, and hence leads to some inaccuracies in the recommendations of the model. The inaccuracies are small for the first areas selected, and grow as more are selected. Since we selected a small number of areas from the sixteen, and since the level of detail in the analysis is relatively low, the impact of the simplifying assumptions was small.

Since only two levels (all or none) were considered for each research area, the relative benefit received the value 0.0 for performing no research, and 100.0 for performing all the research.

3. Assess importance weights. This step assigns a weight to each requirement that indicates the importance of the range of benefits offered by alternative levels. The ORAU prioritization surveyed key Army personnel regarding their opinions about the importance of sixteen civilian personnel functions. We used these importance scores as weights for the research areas. Clark and Savell (1987) presented the top, middle, and bottom sets of priorities, ranked according to unweighted composites of the importance ratings; Figure 11 shows those priorities in the left column.



¹Oak Ridge Associated Universities

²ORAU Question Numbers

³Cost/Benefit Rank Order Using ORAU Data

Figure 11. Prioritization of Research for CIVPERS Multi-Year Contract

4. Identify cost efficient options. The change in levels that increase satisfaction of the requirements are ordered according to their benefit/cost ratio. Choosing the levels that have the highest benefit/cost ratio guarantees that the system design chosen will have the greatest benefit given the cost. Figure 11 shows the ordering of the sixteen research areas according to their benefit/cost ratios in the center column (using the cost and benefit data from the ORAU reports).

The results of the RAM were presented to ARI and DCP representatives for review. These personnel were then asked to give their own ranks to the sixteen research projects. They considered management and policy factors in addition to the ORAU factors. Figure 11 shows the ranking of the research projects given by the government representatives during the review meeting (in the right column).

Findings

1. The RAM analysis ranking of research projects indicates that the four most cost/beneficial projects to investigate are (from highest to lowest): attracting high quality candidates for Army jobs; identifying good candidates for supervisory and managerial positions; developing supervisory, managerial and leadership skills; and assessing employee performance.

2. While there were slight differences in the results of the two ranking procedures of the ORAU prioritization reports and the RAM analysis, there was also substantial agreement between them. In fact, both procedures identified the same three research projects as top priority. The results of the two procedures differed in that the prioritization reports identified retention of productive employees as a top priority topic, whereas, the cost/benefit analysis identified it as a middle priority topic; and the prioritization effort identified assessment of employee performance as a middle priority topic whereas, the cost/benefit analysis identified this as a high priority topic.

3. The ranking by DCP representatives was in greater agreement with the ranking by benefit/cost ratio than with the ranking given by the ORAU prioritization. DCP personnel identified three high priority areas. These areas overlapped with two identified by the RAM and one identified by ORAU. The third area identified by DCP overlapped with a middle priority topic from the RAM and prioritization analyses. The ones considered high priority by DCP were:

- o Q9 "Identifying Good Candidates for Supervisory and Managerial Positions"
- o Q10 "Developing Supervisory, Managerial, and Leadership skills," and
- o Q2 "Selecting Candidates who have Potential for High Performance from the Pool of Qualified Applicants".

Support Requirements

Since Task 3 is already completed, no support is required.

Potential Problems and Solutions

1. Failure of technical assumptions of the analysis. The cost/benefit analysis assumed that the cost and benefit of any particular research area did not depend on other research which had been investigated previously or were being investigated simultaneously. That is, most dependencies between projects were not considered. However, we did consider the cost of performing all prerequisite research described in the ORAU prioritization. Since the analysis had a broad scope, the possibility of dependencies in the cost or benefit of the research areas was substantial. However, because we only made decisions at a gross level, we expect that dependencies had only a minor effect on the results. In addition, since we are principally concerned with identifying a small number of areas from the list of sixteen, the assumptions we have made are likely to be close to the correct values.

2. Elimination of high-priority candidates. Because the cost/benefit analysis was based on a single assessment of cost and benefit, it required the individuals who were making judgments of cost and benefit to mentally aggregate several cost and benefit factors. Because of the likelihood of errors in these mental processes, there was a possibility that areas would be eliminated when, in fact, they should actually have received a higher priority. To avoid this possibility, we tried to be as conservative as possible (given contract resources) in eliminating options. The agreement of three sources of data was sought in identifying high priority research areas. Cost/beneficial areas were identified which were of high rank in the ORAU prioritization and of top priority to DCP personnel.

Task 4. Plan Research for Remaining Years of the Contract

Rationale and Assumptions

Research planning for subsequent years of the CIVPERS contract draws upon several sources of information. The Roadmap presents four phases of research in logical order for the research areas that pertain to our Candidate Selection and Management Training and Development Projects. The ORAU prioritization reports present tasks and subtasks, with specification of prerequisites and other dependencies, for several research areas that pertain to our projects. During the first year of this contract, we are gathering additional information to use in the research planning process (e.g., through the Task 1 systems analysis, Task 2 information/data survey, and Task 3 cost/benefit analysis). In this task, we compile information from those diverse sources to prepare the plan to guide research that we will conduct during the remaining years of the contract.

Method

Subtask 1. Review Roadmap Research Arrays

We will examine the logical progression of research phases that the Roadmap presents in the two arrays related to the selected projects, which are the selection portion of the Recruitment Array and the Personnel Development array. In both projects, we have completed a part of the Phase I work (Establish Baseline Measures) during FY88. However, as we define topics in detail, and select problems to solve, we are likely to need to establish measures in corresponding detail. For example, three elements in the first phase of the Candidate Selection Project are:

1. Develop measures of quality/high performance potential
2. Identify current selection criteria, and
3. Assess quality of current recruits.

Our research during FY88 identifies existing measures, if any, in data bases that might address these elements. However, the topic selected for our first year of work in selection pertains only to first-line supervisors, rather than to general criterion development. Thus, substantial amounts of work remain to address the Phase I elements listed above. Phase I of the Personnel Development Array also addresses development of measures. Thus, the development of measures, including criterion development with its inherent technical problems, is a high priority topic for FY89 (and perhaps future years).

In this subtask, we will review all of the Roadmap phases in light of our FY88 findings and judge whether our new information changes the logical order of the elements in those phases.

Subtask 2. Review ORAU Prioritization Results

The projects selected for this contract pertain directly to three of the ORAU questions (Q2, Q9, and Q10). Clark and Savell (1987) presented detailed progressions of research activities (tasks and subtasks) that clarify the ones that must be accomplished before others. Those activities are paraphrased here, since they represent a base of knowledge that we will update with our FY88 results.

Q2: Select Candidates who have Potential for High Performance from the Pool of Qualified Applicants

1. Evaluate criteria used in employee selection.
 - A. What evidence exists that the quality of new hires is associated with their adequacy as employees? What differences exist in characteristics such as education level or occupation?
 - B. How reliable and valid are criteria used in selection?

- C. How sufficient/accurate are job descriptions? How adequate are criteria for jobs success?
 - D. What kinds of recruits make the most satisfactory employees for overseas positions (in different job categories and at different levels)?
2. Identify strategies for selecting candidates who have potential for high performance from the pool of qualified applicants; select the most promising strategies; and to develop a plan for testing and evaluating the selected strategies.
 3. Conduct the testing and evaluation designed above and make necessary modifications in the strategies.

Q9: Identify Good Candidates for Supervisory and Managerial Positions

1. Review the present process by which Army civilian employees are identified for supervisory and managerial positions and the outcomes of that process.
 - A. What valid indicators of high supervisory and managerial potential can the Army use? Are they different for different areas (e.g., professional, administrative, technical, clerical)?
 - B. What are the shortcomings of below-average supervisors and managers? What problems may result from high-performing technical employees becoming supervisors based on their technical expertise? How do the problems compare with the benefits?
 - C. What are the characteristics of supervisors and managers who become successful upper-level leaders? Are they different for different areas (e.g., professional, administrative, technical, clerical)? Can these characteristics be identified early enough in an individual's career to make an accelerated training program useful in developing leadership skills?
 - D. Do the job descriptions and qualifications criteria of supervisors and managers reflect the characteristics of effective performers?
 - E. What is the impact of having (or not having) well-defined career paths for supervisors and managers?
 - F. What reliable indicators of an individual's ability to adapt to changing environments can be identified (e.g., to pursue opportunities evolving from a willingness to be mobile)?

2. Identify strategies for choosing good candidates for supervisory and managerial positions; select the most promising strategies; and design a concept for testing and evaluating the selected strategies.
3. Conduct the testing and evaluation designed above and make necessary modifications to the strategies.

Q 10: Develop Supervisory, Managerial, and Leadership Skills

1. Investigate the effectiveness of the Army's personnel development programs.
 - A. How effective are the Army's programs aimed at developing supervisory, managerial, and leadership skills? What are the characteristics of these programs (e.g., topics, level of expenditure, participants)? How do the programs compare to those in other government agencies and in private industry?
 - B. Is it feasible to integrate training for civilian supervisors and managers into existing military programs?
 - C. Is there any evidence that mobility and job rotation opportunities contribute to the development of supervisory and managerial skills?
2. Identify strategies and delivery systems for developing supervisory, managerial, and leadership skills; select the most promising strategies; and develop a plan for testing and evaluating the selected strategies.
3. Conduct the testing and evaluation designed above and make necessary modifications to the strategies.

Cursory review of these tasks indicates some critical prerequisites; that is, other research and development must be completed before conducting the work in these tasks. In each case, the prerequisite research pertains to measures (predictors and criteria). Thus, we must include the measurement prerequisites in our plans. The measurement prerequisite work will be conducted through our Personnel Measures Project, which continues through the duration of the contract.

Subtask 3. Obtain Current Problem Definitions

During FY88, we are collecting information concerning topics in Candidate Selection and in Management Training and Development. We will continue meeting with cognizant government personnel, and conduct a few interviews with selected personnel who work in the areas represented by our two projects. We anticipate having resources for no more than three to five interviews for each project. Fortunately, we can identify the cognizant personnel because of our previous and current research in these areas.

Subtask 4. Compile Information for a Multiyear Plan

We will synthesize the information from the Roadmap, ORAU reports, and our FY88 results. This compilation will show the logical or necessary order of research activities (e.g., development of measures and of criteria, and application of the criteria to validate the predictors; development of interventions; assessment of interventions). It will require a ranking of the judged benefits of the topics (problems to address in each project) and estimates of the costs to the contract to perform the research on each topic (to solve or reduce the problems).

Findings

The product of this activity will be a research plan. The plan will present our ideas for FY89 in detail, and ideas for all other years of the contract in general. The contents will include:

1. An appropriately-detailed plan for obtaining the data needed to provide the indicated information concerning the selected research areas.
2. An appropriately-detailed statement and discussion of measures required to obtain the information and the procedures that would be used to ensure the utility, confidentiality, interpretability, and psychometric soundness of the information.
3. An appropriately-detailed statement and discussion (particularly from the standpoint of the Army policy maker or manager) of the desirability/feasibility of obtaining, maintaining, and interpreting data on trends over time or other uses of a data base (automated or manual).

The process (e.g., information compiled from the Roadmap, ORAU prioritization, other research, and our FY88 research) will be reported in the research report that is one of the FY88 deliverables.

Support Requirements

Support requirements for this task are minimal, since we must perform within a reduced scope of work. We propose talking to representatives of the following offices. We would also like to talk to people from the Total Army Personnel Activity, the Training and Doctrine Command, and some Civilian Personnel Offices.

Chief, Manpower Policy and Standards Office
Manpower, Budget, and Force Integration Directorate
HQDA, Pentagon

Chief, Employment and Classification Office
Office of the Deputy Chief of Staff for Personnel
HQDA, Pentagon

Director, Manpower Requirements
U.S. Army Manpower Requirements and Documentation Agency
Fort Belvoir, VA

Potential Problems and Solutions

1. The majority of the resources for FY88 are devoted to producing products for the selection of first-line supervisors. Therefore, we cannot conduct the sample of interviews that we initially planned for this task. We must count on the expertise of the contractor staff, ARI, and DCP to identify the few critical interviewees.

This potential problem is attenuated by the fact that we continue to assess existing measures, procedures, and strategies through the entire contract; thus, we built in a self-correcting mechanism. The corrections will occur in the annual revisions of the research plan.

2. A concern common to the contractor and government staffs is the need to guarantee that our products can, and will, be implemented. The implementation plan prepared by the government is one part of the solution to this potential problem. We must maintain contact, through meetings and interviews, with the users and prospective advocates for our products.

Deliverables

Deliverables include a research report, research plan, and several products.

Research Report

A draft Research Report summarizing the activities and findings of the first year of research (FY88) will be prepared and submitted to ARI for review and approval. The report will include:

1. A detailed statement and discussion of the purposes to be served and the kinds of information needed to serve these purposes. The report will describe for Army policy makers the data that are required for the research and, in addition, make it clear to these policy makers that appropriate data collection systems are being designed to meet Army needs.

2. A discussion of the information that would be useful in assessing the reliability, validity, etc. (i.e., the overall quality or interpretability) of the data that ultimately will be obtained with the measures;

3. A cost/benefit assessment, with reasoned justification, of the consequences of spending all the available contract funds in developing measures of just one of the Roadmap areas versus using these funds for research in two, three, four, or more of the areas; and

4. An interpretive review and assessment of Army or other available baseline measures that may be capable now of providing information of the type called for in Task 2 (Survey of Information Sources and Data), measures that may be available and capable of providing such information if indicated changes were made, and the kind of measures that are not now available and would therefore have to be constructed. This report will focus Army managers and policy makers on the best available data and will permit them to make more informed judgments about additional measures or adaptations that may be needed.

Reviewer comments will be incorporated and the final Research Report will be submitted to ARI.

Research Plan

In constructing a research plan, we will seek a balance between long-term research that requires extensive development and testing before delivering results and those efforts that can produce usable products quickly. For example, production of selection measures for a particular occupation may require extensive development, testing, and validation--and may well be worth it given the eventual payoffs. For large scale efforts, we must be clear about the ultimate payoff. Other efforts, however, yield useful products in the short run. For example, in the selection area, sufficient advances in the work on first-line supervisors have been made to ensure that useful selection procedures can be developed.

The components of the research plan were listed in Task 4, above. Each year, we will update the plan for the remaining years of the contract. The part of the plan for the following year will present details, and the parts for later years will present topics and approaches (including sequences of activities).

Products by Task

This first year of research produces the products listed in the statement of work as:

1. Assessment of Army information needs
2. Assessment of current measures for gathering information
3. Cost/benefit analysis, and
4. Prescription of data required for first-line supervisor selection.

The first three tasks in the Personnel Measures Project all contribute to the first three products named above. These tasks also produce some spin-off products that might be of use to the government. Those products are described below.

Task 1 produced a systems analysis that describes the Army civilian personnel management functions. This analysis was needed to (a) examine personnel management problems from the overall systems perspective, (b) identify function and problem interrelationships, (c) identify constraints and consequences of research in particular problem areas, and (d) suggest specific work that needs to be done to address the problems (e.g., conduct research or change policy). The systems analysis assists in narrowing the focus of problems.

As a spin off, the Task 1 work may be useful to Army in training its managerial workforce. Many military and civilian employees do not understand the civilian personnel management system (e.g., differences between military and civilian policies and procedures), and therefore are less than optimally effective in their jobs. Materials produced in the systems analysis may help in training employees to understand and address the cause of problems.

Task 2 produces a Civilian Personnel Management Data Index. The Army has an enormous amount of data relevant to various civilian personnel management problems. Unfortunately much of the data are scattered, incomplete, incompatible, etc. Future researchers attempting to address civilian personnel management problems would waste much time and resources trying to identify, evaluate, and integrate the data. This task will perform those functions by organizing, cataloging, integrating, and evaluating the data sources so that future research (in this program of research and other Army projects) can efficiently use existing data sources. Also the data indexing will allow the identification of deficiencies in data sources. Future research can focus on developing data bases to meet those deficiencies.

The index provides an approach and instruments for assessing the adequacy of civilian personnel measures.

Task 3 is the implementation of a cost/benefit analysis (using a resource allocation model, RAM) that can help the Army make decisions about which research projects will most benefit the Army, given the contract's resource constraints. This task will produce a more focused list of research projects that will most benefit the Army and be feasible within this contract. This task merges parts of three products: An approach and instruments for narrowing the focus of Army problems, a decision aid (cost/benefit model) that permits Army decision makers to make informed judgments about the need for new and modified measures, and a description of the criteria and cost/benefit analyses that determine where research is most likely to have high payoffs.

As a spin off, the Army may wish to use the RAM model to help make other personnel management decisions. This project will not however provide software. After Task 3, the Army will have enough familiarity with the model to decide if they want to purchase the software for future decision making.

Task 4 collects some interview data. The products are the procedures, instruments (interview protocols) and data needed to define feasible research problems. The personnel management problems stated in the Roadmap and the ORAU prioritization report define 150 research activities. Task 4 provides information to define approaches and statements of work that can provide answers to the significant personnel management problems. Task 4 also produces the research plan, described above. It will incorporate data from all previous tasks and recommend future research activities.

Expectations for Completion of the Research (FY89-92).

We anticipate that the subsequent years of this contract will accomplish research in the three Projects. Measures will be identified or developed as appropriate in each of the topics, and compiled in the Personnel Measures Project. The objective of the measurement research in each project is to identify and develop a set of reliable measures capable of providing quantitative data needed for planning intervention programs to enhance organizational productivity and effectiveness in the Army civilian personnel sector. The content of the projects will be selected in the final planning analysis (Task 4) and updated annually.

TECHNICAL APPROACH FOR CANDIDATE SELECTION: DEVELOP SELECTION PROCEDURES FOR FIRST-LINE SUPERVISORS

The objective of this work is to develop valid and legally defensible selection instruments and procedures for first-line supervisors. The task of developing selection procedures for civilian first-line supervisors in the Army presents a challenge. Candidates for these positions typically have minimal prior supervisory experience on which to base a selection. Consequently, most selections and promotions to supervisory positions are made on the basis of the technical expertise of the candidate. Yet technical expertise, although important, may not be the factor that is most predictive of effective supervisory performance. Candidates may be selected who are technically well-qualified, but who lack the necessary skills, motivation, or interest to be effective supervisors. Those selection procedures which do assess supervisory abilities tend to be based on unsophisticated and global ratings of supervisory ability or potential and usually do not screen out candidates. To provide an adequate assessment of supervisory potential, selection procedures must be developed which measure supervisory abilities.

We can take a number of approaches in the development of fair and valid selection procedures for first-line supervisors. All of these approaches require a comprehensive job analysis. Such a job analysis has recently been conducted on Army first-line supervisor jobs (Rosenthal, Riegelhaupt, and Ziemak, 1988); therefore, selection procedure development can begin immediately.

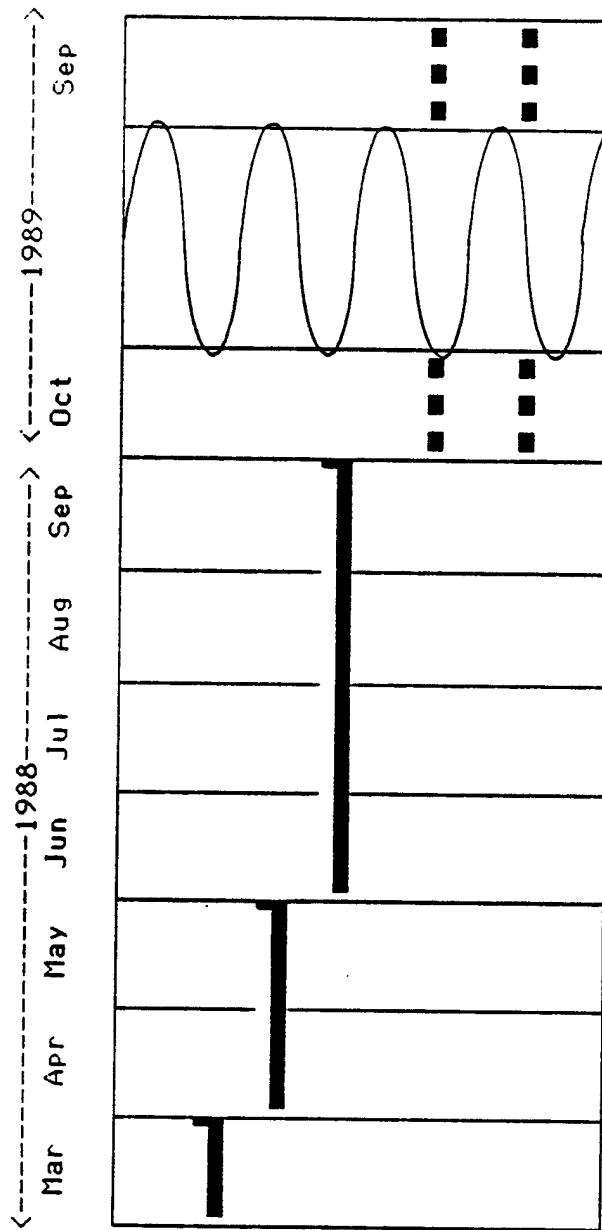
This chapter describes the selection procedure development activities. Figure 12 lists the tasks and shows their scheduled completion dates. Two important aspects of the schedule are the first times that entire drafts are ready (for presentation in an IPR in October, 1988) and that the materials are legally ready for use (in 1989). During the initial preparation of the instruments and procedures, and again during the validation, we will work closely with the government to keep cognizant representatives apprised of our progress.

The exact schedule for the work in 1989 will depend on decisions made in Task 1, and will be presented in the FY89 research plan.

Task 1. Define Selection Procedure Parameters

Rationale and Assumptions

Several important decisions need to be made by the Army, with the guidance of project staff, regarding the approach to developing the first-line supervisor selection procedures. These decisions involve interpretation of the findings of the first-line supervisor job analysis (Rosenthal, et al., 1988), and selection of the appropriate validation approach.



TASK

1. Define Selection Procedure Parameters
2. Link Tasks to KSAOs
3. Develop Draft Selection Procedures
4. Develop Selection Procedure User Training*
5. Pilot/Field Test Selection Procedures and Training*

* Time depends on extent

Figure 12. Milestones for Selection Procedures for First-Line Supervisors

Interpret the Job Analysis

The first-line supervisor job analysis provides the data needed to develop valid selection procedures. There are several issues regarding the job analysis that must be formally reviewed and approved by the COR and relevant Army policy/decision makers because they have a significant impact on selection procedure development. Furthermore, Army decision/ policy makers must address these issues quickly, so that work can proceed on time.

On the basis of the job analysis, we concluded that a single selection procedure could be used for all first-line civilian supervisors in the Army. The data that support this recommendation must be formally evaluated and the Army should consider the practical implications of the recommendation. For example, this approach would greatly simplify development and administration. However, we need to consider the likely reaction of the users to such a selection procedure. If such a system would have low face validity (credibility) we might consider other options.

A second issue to address is further data analyses and data collection to expand the job analysis data base for selection procedure development. The job analysis identified 226 tasks, 42 knowledges, and 51 abilities, skills and other characteristics (ASOs). Such data are too complex to be practical. Also, the Uniform Guidelines on Employee Selection (Equal Employment Opportunity Commission [EEOC], 1978) require that selection procedures be clearly linked to important work behaviors (i.e., tasks). Since the selection procedures will be KSAO-based, the KSAOs must be empirically linked to the tasks. Therefore, several decisions must be made regarding the approach to data simplification and task-KSAO linkages.

We have several approaches to task-KSAO linkage and data simplification. The job analysis presented a factor analysis of the 51 ASOs which produced an elegant eight factor solution. A factor analysis (or some other empirical approach) can be similarly conducted to simplify the task data. This approach to data simplification is scientifically appropriate; however, professionals disagree over the extent to which techniques like factor analysis weaken a content validation argument by making the job-selection procedure relationship more abstract. Some professionals argue that such analyses are only appropriate for construct validation; unfortunately, and a construct validation study is not feasible in this project.

An approach to task-KSAO linkage often taken by the Army is to link every important task to every important KSAO. In this case such a linkage process could require 21,018 judgments (226 tasks x 93 KSAOs) by subject matter experts. Making over 20,000 linkage judgments is well beyond the range of what we can realistically expect of subject-matter experts (SMEs), while still obtaining reliable judgments.

As a compromise, we suggest a two stage linkage process that is described in more detail in Task 2. In Task 1, we will discuss this approach, with its costs and benefits, with the COR and relevant Army policy/decision makers.

A third issue is the recommendation from the job analysis regarding the appropriateness of selecting candidates based on supervisory knowledges. Rosenthal, et al., 1988, p. 38) stated that:

...although several supervisory knowledges were identified as important for effective job performance, some may be inappropriate for use as selection criteria because they are not typically acquired before job entry. To make employment contingent upon the applicant's possession of them could eliminate most if not all candidates for some positions. Furthermore, as discussed in the Uniform Guidelines on Employee Selection (1978), it is not appropriate to select candidates for possession of knowledges which can be taught in a brief orientation or when new hires are expected to learn them on-the-job.

The problem facing the Army is that training for most of these supervisory knowledges does not occur immediately upon becoming a supervisor. Newly appointed supervisors may be in the job for six months or longer before they acquire these important knowledges. In that period of time the supervisors can make many critical errors. Therefore, selection based on possession of the important supervisory knowledges would have substantial utility.

Army decision/policy makers must decide on how to deal with this situation. If they want to select based on the important supervisory knowledges, then some mechanism for providing first-line supervisor candidates with those knowledges must be provided. That mechanism may be a pre-selection supervisory training program. Such training could be centered on self-taught/self-paced training manuals and workbooks or it could be much more sophisticated (interactive videodisc or formal classroom training like the current Basic Supervisory Development course).

If Army decision/policy makers determine that it is not cost effective to provide such pre-selection training, then selection based on the important supervisory knowledges would not be appropriate. Therefore, the selection procedures developed in this project would only focus on the ASOs.

Validation Approach

The approach we take to develop selection procedures will determine the validation procedure we use. The Standards for Educational and Psychological Tests (American Educational Research Association, American Psychological Association, and National Council on Measurement in Education, 1985) endorse three perspectives from which to consider the relationship between a procedure and job performance. A valid predictor of job performance may be defined relative to the specific content of a job (content validity), a particular measure of job performance (criterion-related validity), or explicitly to the construct underlying effective performance (construct validity). Thus, the extent to which a selection

procedure is successful, relies on the breadth and accuracy of the definition of effective job performance. In compliance with the Uniform Guidelines (EEOC, 1978), the relationship between a selection procedure and job performance may be demonstrated through content, criterion-related, or construct validity. We discuss each of these approaches below as they apply to the current research.

Content validity. One of the most common approaches to selection procedure development and validation is a content-oriented approach. A selection procedure is content valid to the extent that it is representative of significant aspects of a job. In contrast to a criterion-related strategy where the primary consideration is of future performance on a job, a content valid approach is fundamentally intended to measure an applicant's existing level of a knowledge, skill, ability, or other characteristic (KSAO). A clear relationship between those areas of achievement and job performance is assessed via a judgmental evaluation process carried out by subject matter experts.

The predictors used should be developed in reference to the collective constituency of the job content domains as defined in the job analysis. An initial determination of the job content universe should assess those domains that are (a) important, (b) measurable, and (c) that add incrementally to selected domains. Job domains representing certain KSAOs should be distinguished as those that should be prerequisites as opposed to those which can be expected to be acquired during job training. Only the former should be used for selection procedure development.

We can identify and develop a selection procedure after we establish the relevant job content domains. Different selection methods should be evaluated based on consideration of past validity and reliability, selection fairness studies, administrative efficiency and feasibility, and development and administrative costs.

Criterion-related validity. In a criterion-related validity study the job relatedness of a particular selection procedure is established in reference to specific measures of job performance. Operationally, validity is established by showing a significant statistical relationship between the selection procedure and criteria representing important or critical work behaviors or outcomes. Criteria suggested in the Uniform Guidelines (EEOC, 1978) include production rates, error rates, tardiness, absenteeism, length of service, standardized ratings for overall performance, and measures of relative success in training. Thus, the feasibility of a criterion-related validity approach is assessed relative to the accessibility of relevant, reliable, and uncontaminated criteria of employee performance behaviors.

Construct Validity. The construct validity of a predictor essentially refers to the extent to which the predictor measures an underlying trait. Thus, in a construct validity approach the thrust is to answer what and how well a psychological construct is being measured by a predictor (Brown, 1976). Based on theory, construct validity begins with hypotheses about the relationship between a predictor measure and the behavior that the measure is intended to predict. The hypotheses are then tested to support the

construct validity of the instrument. Support for construct validity may be obtained by using a number of procedures such as providing firm research support for expected group differences, changes in measurement over time, correlations between similar measurements, and the internal consistency of the selection procedure.

A construct validity approach by itself is rarely used to support the job-relatedness of a selection procedure. A conclusion of strong support for a selection procedure validated through construct validation alone requires extensive data collection and analysis, concerned with identifying, defining, and supporting a construct relative to a measuring instrument.

Operational aspects of validity. Until the introduction of the Uniform Guidelines (EEOC, 1978), criterion-related validity was considered the most acceptable approach to test validation (Landy, 1986). The Uniform Guidelines (EEOC, 1978) then promoted equal status for content validity. Construct validity was also deemed acceptable by the Uniform Guidelines (EEOC, 1978), although the implicit suggestion was that construct validation be backed by criterion-related validation.

Legally and professionally all three approaches to selection procedure development and validation are defensible. However, we believe that a content-oriented approach will have the greatest utility for the Army. A content-oriented approach will result in the development and availability of a legally defensible and valid selection procedure in a relatively brief period of time. A criterion-related approach would also produce an appropriate selection procedure. However, we do not have criteria and can not develop them within the schedule planned for this first-line supervisor work. (The Army may decide to have us develop criteria later in this contract.) Further, a criterion-related approach would require the identification and development of relevant, uncontaminated and reliable criterion measures. The benefit of the criterion-related approach would be the possibility of greater legal defensibility. Other successful and legally defensible Army selection systems (e.g. ACCES) have been validated through a content-oriented approach. Extending this argument to the construct validity approach leads us to conclude that a content-oriented approach will provide the greatest utility to the Army at this time.

Method

This Task has a single activity: conducting an informational meeting with Army policy/decision makers. We will present to the decision makers the issues discussed above, so that they can make informed decisions about how this project will proceed and the nature of the products that we will deliver. The following questions must be answered by the Army after the informational briefing:

1. Will one generic selection process be acceptable for all types of first-line supervisors?

2. After assessing the cost and benefits of alternative task-KSAO linkage approaches, is the recommended two-stage approach acceptable to Army decision makers?
3. Will important supervisory knowledges be assessed in the selection process? What approach to training these knowledges is most feasible?
4. Is the recommended content validation approach the most appropriate for Army civilian first-line supervisors?

Support Requirements

Army policy/decision makers must first attend the informational briefing and then make the decision listed above. We need them to complete these decisions during March 1988 to guide subsequent research activities and maintain our production schedule.

Potential Problems

If the Army policy/decision makers do not make timely and appropriate decisions, subsequent research activities cannot continue. To avoid this problem, we will conduct the informational briefing as soon as possible so that Army policy/decision makers can make informed decisions.

Task 2. Link Tasks to KSAOs

Rationale and Assumptions

We assume for planning purposes that we will use a content validity approach. A key aspect of content validation is the linkage between the selection procedure and the content of the job as defined in the job analysis. To the extent that the content of the selection procedure closely maps onto the critical and important aspects of the job, the validity of the selection procedure is strengthened. Furthermore, the job requirements (KSAOs) measured in the selection procedure must be demonstrated to be prerequisite for successful job performance.

To develop content valid selection procedures, additional data must be gathered. The prerequisite KSAOs must be clearly linked to time consuming/important work behaviors (tasks). Below we describe the approach we recommend for collecting the data. We address this issue in Task 1 and we may identify an alternative method.

Method

The first-line supervisor job analysis identified the critical (most important and time-consuming) tasks and the most important KSAOs. As previously described, linking every task to every KSAO is not practical because up to 21,000 judgments would be required. We propose a method that meets professional standards and legal guidelines for content validity, yet greatly reduces the number of judgments required. Four subtasks are required in this method.

Subtask 1. Cluster tasks. The 226 tasks will be sorted by project staff into clusters of interrelated tasks. The job analysis researchers used judgmental processes to organize the tasks into eleven categories (e.g., personnel staffing, position management). This grouping is a good starting point; however, further sorting may be required within the categories that contain a large number of tasks. For example, the category "Managing the Workforce" contains 40 tasks. This category could be further broken down into meaningful clusters of tasks related to performance appraisal, counseling, adverse actions, and rewarding effective performance. Where appropriate, project staff will rationally subdivide the larger clusters of tasks into several smaller groups. The new task clusters will be presented to the COR for review.

Subtask 2. Link task clusters to KSAOs. The next step is to have SMEs link the important KSAOs to the clusters of tasks identified in Step 1. These ratings will be made in a series of workshops with a minimum of 30 first-line supervisor incumbents. We chose 30 as a minimum because when samples are equal to or greater than 30, the sampling distribution of the mean is normally distributed, making inferences from the data more appropriate. A sampling plan will be developed to identify the characteristics of the sample. The job analysis results did not identify meaningful task differences across job types, grade level or other demographic characteristics, so these factors will not necessarily be the central variables in the sampling plan. The primary consideration will be in drawing a diverse sample of subject matter experts to participate in the linkage activities.

The task cluster-KSAO linkages will be conducted in a series of workshops expected to take from three to four hours. We will construct a matrix of task clusters by KSAOs. For each task cluster, SMEs will be asked to rate the importance of each KSAO for effective performance. The ratings will be made using a five-point importance scale. We can expect, at this point, that there will be from 15-20 task clusters and 93 KSAOs, resulting in from 1,395 to 1,860 ratings. Our previous experience in linkage workshops suggests that SMEs can make this number of judgments in less than four hours.

Subtask 3. Analyze task cluster KSAO data. The data collected in Subtask 2 will be analyzed to identify the important task cluster-KSA combinations. Those combinations which are unimportant will be dropped from further consideration. Through this process we anticipate that between 50 and 70 percent of the task-KSAO linkages will be eliminated.

The analysis will consist of simple descriptive statistics (e.g., means and standard deviations) and intraclass correlations to assess the reliability of the ratings. Project staff will conduct these analyses using a statistical software package (e.g., the Professional Database Analysis System, PRODAS) on personal computers.

Subtask 4. Link remaining tasks to KSAOs. A second series of linkage workshops will be conducted with a minimum of 30 first-line supervisors (who did not participate in the Subtask 2 workshops). This time linkages will be made directly between the remaining task-KSAO combinations. Also, tasks which received ratings of both low importance and low time spent in the job analysis will be eliminated from this stage in the linkage. Therefore, only the most salient tasks will be linked to important KSAOs. We anticipate that from 2,000 to 4,000 linkage ratings will have to be made, requiring from four to eight hours.

Support Requirements

This task requires participation of at least 30 first-line supervisor SMEs for one-half day workshops and at least 30 additional first-line supervisor SMEs for one day workshops. We will conduct the workshops at HumRRO in Alexandria, Virginia.

Potential Problems and Solutions

The task-KSAO linkage requirements are very great and probably beyond what first-line supervisors can realistically be expected to accomplish. To resolve this problem, we propose the two stage linkage process (described above) that greatly reduces demands on SMEs.

Task 3. Develop Draft Selection Procedures

Rationale and Assumptions

The results of the job analysis and the linkage workshops described in Task 2 will provide the basis of all selection procedures that will be developed. The data will be analyzed, in conjunction with the selection research literature (e.g., Carlyle, 1986), to identify the most appropriate selection procedure(s) for Army civilian first-line supervisors. In this task, we describe the development process for two potential selection procedures. The actual procedures we develop will be based on Task 1 decisions and the data collected in the linkage workshops (Task 2).

Method

Subtask 1. Selection procedure development planning. The first activities in Task 3 will examine the data provided in the job analysis (Rosenthal, et al., 1988) and the linkage workshops (Task 2). This information will be compared to recommended first-line supervisor selection procedures in the research literature (e.g., Carlyle, 1986). Based on this examination, we will identify the best selection procedures for Army civilian first-line supervisors. The next step will develop a selection procedure development plan to guide the subsequent activities in the Task. This plan, including a description of the ultimate selection process and procedures, will be presented to the Army in an informational briefing.

Subtask 2. Develop the first-line supervisor selection procedures. At this point the necessary data are not available to determine exactly what selection procedures will develop. For planning purposes, we present the significant issues and research activities required in one potential selection process.

We propose to develop an "ACCES-like" system and a structured interview guide to be used for selecting first-line supervisors. This system would embody the ACCES concepts of multiple measurement techniques, independent measurements techniques and objective combination of scores. It would improve the interview component which is frequently used, but often too subjective. We propose a multiple-hurdle approach whereby the ACCES-like process would identify a set of highly qualified applicants, followed by a structured interview. This method is consistent with the selection process in career programs under ACCES.

Data generated by the proposed selection process will most likely be compatible with current Army efforts to automate candidate evaluation procedures. Every effort will be made to communicate with Army personnel involved in the prototype candidate evaluation project and other automation efforts to ensure that the results of this project can be used within the Army's current and planned operating personnel environments.

1. ACCES-like selection procedure. ACCES makes use of traditional performance ratings plus ratings based on written examples of previous behaviors. These written examples are assumed to reflect behavioral consistency in the applicant. In other words, the applicant's past behavior is assumed to be a good indicator of his/her future behavior. ACCES combines aspects of TRAEX, self ratings, and supervisory ratings. It also relies, in part, on the behavioral consistency method for predicting future job performance (Schmitt and Ostroff, 1986; Schmidt, Caplan, Bemis, Decuir, Dunn, and Antone, 1979). Figure 13 shows a model of this process.

In ACCES, three individuals rate each candidate. The supervisor rates the candidate on the KSAOs required to perform the job. The candidates rate themselves on the knowledges. The candidate also writes accomplishments that demonstrate their abilities. An individual, usually the candidate's second-line supervisor, reviews the supervisor's ratings for accuracy and inflation of scores. Then, trained accomplishment raters rate anonymous

	KNOWLEDGE	ABILITY
EMPLOYEE	*RATES KNOWLEDGE	WRITES ACCOMPLISHMENTS FOR ABILITIES
SUPERVISOR	*RATES KNOWLEDGE	*RATES ABILITIES
REVIEWER	REVIEWS AND MAY CORRECT SUPERVISOR'S RATINGS (WRITES REASONS FOR CORRECTIONS)	
ACCOMPLISHMENT RATERS	XXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXX XXXXXXXXXXXXXXXXXXXXX	RATES ANONYMOUS ACCOMPLISHMENTS

* NO JUSTIFICATION REQUIRED

Figure 13. ACCES RATING PROCESS

accomplishments and assign them ratings. The candidate's final score is determined by summing the candidate's self-ratings on the knowledges, the supervisor's ratings given on the KSAOs, plus the trained reviewer's ratings given to the candidate's accomplishments. The employees' self-ratings contribute 25 percent to the total score, supervisor's ratings contribute 50 percent, and 25 percent comes from the accomplishment raters.

The Army's career programs use a simple five-point rating scale for self and supervisor ratings in the current operational use of ACCES. Judging from the success of ACCES, we believe that a similar rating scale approach would be successful for the self and supervisor ratings of knowledges that we may need to develop. We will therefore develop five-point rating scales, with simple descriptive anchors similar to those used in ACCES.

The rating scales required for the behavioral consistency - accomplishment ratings (and possibly the supervisor ASO ratings) should be developed with as much scientific and practical rigor as possible. Although behavioral anchors are not necessary for self or supervisory ratings, they are an important component in the behavioral consistency-accomplishment ratings. Raters using the behavioral consistency-accomplishment scales must be able to judge levels of skills and abilities based on a wide range of accomplishments from very diverse situations. The behavioral anchors provide information necessary to assist raters in making these judgments. Below we discuss how these anchors would be developed.

2. Develop behaviorally anchored rating scales. Behaviorally anchored rating scales will be developed for performance dimensions or categories based on the abilities, skills, and other characteristics required for first-line supervisor job performance. For the present effort, five steps are involved in scale development; each of these steps is discussed below. These steps will be conducted through a series of first-line supervisor SME workshops.

Step 1: Identify and define ASOs in need of behavioral anchors. The first-line supervisor job analysis (Rosenthal, et al., 1988) identified the supervisory ASOs that are potentially relevant for selection procedures. Some of these ASOs may be difficult or impossible to measure in the proposed selection process and will not be considered further. Many ASOs may remain, perhaps too many for practical measurement. Therefore, some ASO combinations may be required at this point. The job analysis identified a simple eight factor solution that captured all important ASOs. These factors will be examined further to determine if they can provide the basis of the dimensions or categories to be measured by the selection procedures. To bolster the content validation argument, we will collect additional data from SMEs. SMEs will be required to link the specific ASOs to the eight factors identified in the job analysis. Those ASOs which are unambiguously and reliably linked to a factor will provide the operational definition of the dimensions to be measured in the ACCES-like procedure and the structured interviews.

Step 2: Generate behavioral examples for each ASO dimension. After the ASO dimensions have been defined, the next step is to collect behavioral examples for each ASO dimension. Workshop participants will be asked to write examples of highly effective, ineffective, and moderately effective behavior for each of the dimensions. The moderator will explain what the examples should look like and how they will ultimately be used. Participants will be asked to write at least three behavioral examples for each dimension. The outcome of this step will be a sufficient number of behavioral examples to take into the next step of scale development.

Step 3: Edit behavioral examples. All behavioral examples will be edited by the researchers in preparation of the next step in scaling. In addition to correcting spelling and grammar, redundant incidents will be pooled, and the incidents will be written in a common format.

Step 4: Retranslation and effectiveness rating. Retranslation is the process of confirming the dimensionality of the behavioral examples. Each example is evaluated by job experts similar to those who wrote the examples. These judgments can be collected either through workshops or a mailed survey. Two ratings must be made for each incident. First, the raters must indicate to which ASO dimension each incident belongs. Second, they must estimate the level of effectiveness illustrated by the behavior described in the incidents. The retranslation ratings will be evaluated, first, to identify incidents which are so ambiguous that there is no consensus about what ASO dimension they illustrate, and second, to identify ASO dimensions which are similar enough to warrant combining them.

In analyzing the examples' effectiveness ratings, two considerations are important. First, the incidents chosen to illustrate a dimension should reflect the entire range of effectiveness in that dimension, from ineffective performance to outstanding proficiency. The second relevant parameter of an incident's effectiveness rating is its variance. High rating variance for an incident reflects poor rater agreement about the competency level the behavior reflects. If the behavior reflects an ambiguous level of a dimension, it cannot serve as a reliable anchor to illustrate a specific, fixed level of proficiency. For each dimension, we will choose a pool of items with low variance, which also meet the requirement of maximum representation through the scale continuum.

Step 5: Review completed scales. After the behavior examples have been selected and arranged in a scaled continuum of proficiency for each dimension, a group of job experts will be asked to review each scale. Despite efforts to obtain reliable estimates of each incident's effectiveness level, the final scores frequently include some inversions. In an inversion, an incident is rated as more effective than some other, when other SMEs unanimously agree that the reverse should be true. The ultimate requirement is that the scale accurately reflects variations in possible levels of job proficiency, and that it is acceptable to the people who will use it. Therefore, a representative sample of users should serve as the final jury for the scale, and their suggestions about the placement of incidents should be overruled only with extreme caution.

3. Structured interviews. As described earlier, structured interviews are recommended as a second (optional) hurdle in the first-line supervisor selection process. For this project, we will develop a guide on interview techniques specifically suited to managers who make selections for first-line supervisors. The guide will focus on techniques that would help the manager effectively assess supervisory ASO or dimensions and not just the "do's and don'ts" of the interview process. One such technique would be to develop a standardized set of questions to be asked to elicit amount of possession of KSAOs with guidelines for scoring the candidate's responses. We propose a set of structured questions and a behaviorally anchored rating scale for each ASO dimension to accompany the typical interview guide. Recent research supports the superior validity of behaviorally based interviews and scales over unstructured interviews (Orpen, 1985).

The typical guide focuses on "dos" and "don'ts" in the interview process. These guidelines are necessary but not sufficient. A number of installations (e.g., Ft. McClellan, Ft. Gordon, and Ft. Benning) have developed structured interview guides. Generally, these guides provide information on how to prepare for the interview, types of questions to avoid, and recommendations on a line of questioning that will best address the KSAOs. We propose to integrate the existing guides and to standardize this last component. The ASO dimensions, which were identified in the job analysis and previous steps, would be listed. Then, specific questions for each ASO dimension with guidelines on how to score responses would be provided. The guidelines for scoring responses would be based on the behaviorally anchored rating scales described earlier. Thus, the interviewer would know what a "5" point, as opposed to a "2" point response is because the scale point would be anchored by behaviors.

Much of the development process required for structured interviews overlaps with the accomplishment rating scale development described earlier. The critical incident and retranslation workshops described in previous sections will provide background and information necessary to develop the structured interview guide. The interview will focus on the job-content domains as they relate to the applicant's work history rather than just specific tasks.

We will develop a standardized set of structured questions that will allow the interviewer to accurately assess an applicants' probable performance as a first-line supervisor. Furthermore, the behavioral rating scales that will be developed for use by accomplishment raters can be considered the scoring keys on which interviewers can record an applicant's level of an ASO dimension. At this stage, the only aspect that is missing from the interview guide is a set of questions that will elicit behavioral examples of the ASOs that the interviewer needs to evaluate. The development of these questions requires the examination of the linkages between critical tasks and KSAOs (which has been described in Task 2) to develop open ended questions.

Working with SMEs, we will develop a set of task-based questions which fully cover the domain of ASOs required for the job. Questions will be open-ended and non-directive. Any given question should provide information

about many ASOs. The goal will be for the interviewer to ask enough task-based questions that elicit responses reflective of the ASOs so that he or she will have enough information to evaluate the candidate on each ASO dimension on the behaviorally anchored scales. Questions in the interview guide will be grouped by ASO dimension so that the interviewer can be sure he or she has asked enough questions to evaluate each dimension before moving onto the next set of questions.

4. System implementation. To implement this multiple hurdle system for first-line supervisors, we propose a slight modification to the ACCES implementation plan. When ACCES is first introduced into a career program, it requires that everyone who signs up for the program complete their ACCES packages and be uploaded into the data base before ACCES is used to generate referral lists. However, it is inefficient to wait until everyone who desires to be a first-line supervisor has been entered into a data base and to require applicants to redo all of the paperwork every time they want to apply for a first-line supervisory position. We propose a more efficient means of achieving our goals. As vacancies occur, applicants wishing to apply would complete their ACCES-like packages and be uploaded onto the system. Generation of referral lists would proceed as in ACCES. As new vacancies exist, new applicants would be uploaded as they applied. Previous non-selected applicants would already exist on the data base and would not have to be reentered. Over time, the data base would grow. The data base can be centrally administered, as in ACCES, or locally administered. We would recommend, however, that if the decision is to administer locally the selection system, the local files be compatible so that they can be merged, or linked, if desired.

Support Requirements

Task 3 will require the participation of a yet to be determined number of first-line supervisor SMEs. Primarily SME input would be required in the development of the Behaviorally Anchored Rating Scales (BARS). Additional Army assistance will be required in gaining access to developers and users of existing selection procedures. We will review these procedures and interview the users to identify past problems so that they can be avoided in this project.

Potential Problems and Solutions

1. A major concern of this project is that the product is usable by Army selecting officials and personnel specialists. The best scientifically developed product will not always be practical in an operational setting. To ensure that the products developed in this project are useful, we will work closely with Army field staff in both the development (Task 3) and pilot/field testing phases (Task 5). Additionally, we will examine previous personnel research in the Army to identify characteristics that led to successful (or unsuccessful) implementation.

2. All selection procedures should be carefully developed, validated and reliably used. Even the best selection procedures are subject to litigation if they have adverse impact on a protected group. Since the first-line supervisor selection procedure will potentially be used to make thousands of selection decisions per year, the chances of litigation are ever present. To address this potential problem all selection procedures will be developed and validated in accordance with relevant legal guidelines and professional practice. Furthermore, user training will be developed and administered so that the ultimate users of the system will make reliable, fair and valid selection decisions.

Task 4. Develop Selection Procedure User Training

Rationale and Assumptions

After we develop the selection procedures, we will develop an interviewer training package. Video tape training and workshops will be considered for use in an interviewer training program. Similar training will be developed for the ACCES-like system so that field personnel can easily use the system. Also, if the Army determines that pre-supervisory candidate training is required, it could be developed as part of this Task.

At this time the Army must make a number of decisions relevant to selection procedure development. Specific decisions regarding user training will be made after the selection procedure has been determined. Details of user training development will be described in the FY89 research plan.

Method

There are three basic phases to the development of any training program: (a) a needs assessment phase, (b) a design of instructional procedures and materials phase, and (c) an evaluation phase. Following the Instructional System Development (ISD) approach, any one phase of the training program requires input from the previous phase.

The needs assessment is required to determine training goals or objectives. These objectives must be stated in terms that are measurable. The desired behavioral objective is broken down into a set of tasks which must be performed and a set of KSAOs required to accomplish these tasks. We also analyze the background of trainees to determine the KSAOs trainees need versus those they already have. For example, when developing training techniques for selection procedures, the needs assessment phase would determine the tasks in the selection process, the KSAOs needed to perform those tasks, and the initial background in those KSAOs of individuals who would participate in the training.

The proposed selection procedure would involve training several different audiences to do specific tasks. Candidates would need to be shown how to write the accomplishment statements which illustrate specific

knowledges important to the job of first-line supervisor. Supervisors would need to be trained to use the rating scales which assess the amount of KSAOs possessed by each candidate. Candidates' second-line supervisors would need to be shown how to review the accomplishment statements of candidates for accuracy. The anonymous accomplishment raters would need instruction in the use of the BARs scales designed to rate the written accomplishments of candidates. Finally, selection personnel would need training in the process to be followed for the structured interview.

Much of the information we need to develop a training program for the Army's Civilian selection procedures is presently unavailable. To perform the needs assessment for this task, we need a detailed description of the selection procedure and a knowledge of the type of personnel who will be using the procedure. This detailed information will necessarily dictate the procedures to be followed in the needs assessment.

In the next phase of training program development we will design training materials and procedures. The development of the training materials and procedures consists of several steps and draws upon the information obtained through the needs analysis. The first step is to design the instructional components of the training program. This encompasses (but is not limited to) such decisions as which method and media should be used; whether self-paced or group-paced instruction is appropriate; and, how to assess student performance. Once these decisions and others are made, available resources and potential constraints must be identified in an effort to determine the feasibility of the training program. This may include such considerations as time, cost, and availability of training personnel. These considerations modify the preliminary instructional components, leading to the detailed development of instructional materials and media. Based on the objectives of the training program, means of assessing student performance are developed which will serve not only as a diagnostic tool, but also as a means of obtaining quantifiable feedback on the effectiveness of the training program. In keeping with the ISD approach to training, the program would then be field tested, evaluated, and further revised before operational installation (Gagne, & Briggs, 1974).

The final phase of training program development, evaluation, will focus on determining whether the training program accomplished the objectives for which it was developed. Issues to consider in evaluation are: user acceptability, adequacy of trainee performance, and transference of the learned behaviors from the training setting to other settings. The criteria used for evaluation of the training program are measurements of progress in attaining the objectives determined in the needs assessment phase.

Support Requirements

Specific Task 4 support requirements will be provided in the FY89 research plan.

Potential Problems and Solutions

No problems are anticipated at this point in Task 4. Problems that arise will be discussed in the FY89 research plan.

Task 5. Pilot/Field Test Selection Procedures and Training

Rationale and Assumptions

Once the selection and training procedures have been developed, they will need to be pilot and field tested. Pilot testing is conducted quickly under highly structured conditions. If a procedure does not work well under the ideal pilot conditions, it is unlikely to be successful in a field situation. Revisions to procedures will be made based on results of the pilot tests. The pilot tested instruments and procedures will then be field tested at two or three installations to identify unanticipated problems that will occur in implementation phases. The details of Task 5 will be presented in the FY89 research plan. Below is a brief description of pilot and field test issues that will be addressed.

Method

Subtask 1. Pilot/field test ACCES-like system. In the pilot test, pairs of raters will rate first-line supervisory ability accomplishments independently. The interrater reliability of the scales will serve as a primary index of scale effectiveness. We will also analyze the scale (dimension) score intercorrelations to estimate the degree to which each of the scales is measuring a unique aspect of the job content domain.

Concurrent with the pilot test of accomplishment rating scale, raters will complete sample self and supervisor rating forms. After completing these ratings on the pilot instruments, raters will be interviewed to evaluate their reactions to the scales. They will be asked to comment on their clarity and ease of use. Revisions will be made as required. The product will be self and supervisory rating scales required for use by job candidates and their supervisors, and behaviorally anchored rating scales, required for accomplishment raters to evaluate candidates' written accomplishments.

Subtask 2. Pilot/field test structured interview guide. Pilot interviews will be conducted to evaluate the reliability and validity of the interview. Typical hiring officials (i.e., second-line supervisors) and recently selected first-line supervisors will role play as interviewer and interviewee, respectively. Two interviewers will attend each interview. Interviewers will be briefed on the purposes and objectives of the procedure and project, and then trained on how to conduct the interview. One interviewer will actually conduct the interview. However both will take notes and score the interview. Approximately 20 interviewer pairs will

conduct three interviews each for a total of 60 interviews. Each interviewer pair will be joined by a project member to monitor the process. Results of the observation and the interrater reliability will be used as additional information to modify the instrument. Additionally, the reactions of each interviewer to the interview process and content will be obtained.

Data analysis following the interviews will be used to explore further the interview content and psychometric properties. The interview will be modified for a field test similar to the pilot testing. Data from the field test will be used to develop an operational instrument. The product of this subtask will be a structured interview guide which will contain a series of structured, open-ended questions, the responses to which will reflect possession of prerequisite ASOs, and a set of behavioral scales on which each ASO dimension will be evaluated.

Subtask 3. Pilot/field test training. A small group of potential users of the selection procedures will participate in a pilot program designed to provide training in the use of the selection materials. Their reactions to the training program will be surveyed. We will gather information from participants to assess the effectiveness of the training procedures, the practicality of the training program design, and ideas for improvements. The final design of the training program will incorporate feedback from the participants in the pilot training.

Support Requirements

Specific Task 5 support requirements will be provided in the FY89 research plan. At this point, we can anticipate the need for 60 second-line supervisors and 30 first-line supervisors to participate in the interview guide pilot test. Additionally, two or three field sites (their personnel offices and staff, candidates and hiring officials) will need to participate in the field test.

Potential Problems and Solutions

No problems are anticipated at this point in Task 5. Problems that arise will be discussed in the FY89 research plan.

Deliverables

(1) We will present the draft procedures in an IPR during October, 1988.

(2) During the fourth quarter of FY89, field tested, valid selection procedures for Army civilian first-line supervisors will be submitted to the Army for review and approval.

(3) Concurrent with delivery of the selection procedure we will submit for review and approval the field tested user training procedures.

(4) A draft validation report will be prepared and submitted for review and approval. The report will completely document the activities of Tasks 1 - 5 and contain all information required by legal and professional guidelines on selection procedures. This report will include:

- o A summary and analysis of the first-line supervisor job requirements as defined in the job analysis
- o An approved selection procedure development plan
- o A description of the selection procedure development process, and discussion of relationships between specific items/questions/procedures and critical parts of the job domain
- o Discussion of the selection procedure's validity and limits to its generalizability, and
- o Results of draft selection procedure pilot and field tests, including item analyses, reliability estimates, and rationale for selecting items, questions or procedures for the operational selection procedure.

After comments on the draft report are received, they will be incorporated, and a final report will be prepared and submitted.

(5) The procedures for administering and scoring the first-line supervisor selection procedure will also be delivered with the selection procedures and validation report. Particular attention will be focused on how the selection procedure can easily be used by personnel staff at each of the installations that employ people in the target job. Therefore, it is critical that this report and accompanying procedures be clearly written in non-technical language. Based on our past experience, we have found that if simple procedures appear complex they are less likely to be implemented effectively.

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APPENDIX A

SUPPORTING DOCUMENTATION AND DISCUSSION FOR THE TASK 1 SYSTEMS ANALYSIS

Introduction

The purpose of Task 1 is to provide a conceptual frame-work for this Army civilian personnel management research contract. This appendix describes the analytical method used to describe the environment in which the civilian personnel system operates to support the Army in the accomplishment of its national security mission. It also presents the results of the analysis as of January 30, 1988. We use the results during the contract to provide context and help focus analysis and the application of our research. We believe that this task is essentially completed. The Government may ask us to adjust some elements or decompose another function or two, but we do not plan to commit much additional effort to Task 1.

Method

Analytical technique. The Task 1 analysis employed a modified IDEF (defined in the body of this report), a top-down, structured, hierarchical systems analysis method. A method such as this allows an accurate and rigorous systems analysis and problem definition. The remainder of this section presents IDEF conventions and notation, abstracted from a recent HumRRO application to Army and Air Force training data systems (Elder, Sticha, DeYoe, Napolitano, Knerr, Blacksten, & Barnes, 1986).

IDEF model organization and format. IDEF is a systems analysis technique that enables people to understand complex systems, and to communicate their understanding to others. IDEF describes the functions performed by the system by successively decomposing the system into its basic components, describing how each component processes information, and specifying how different components interact. An IDEF model is expressed as a series of related diagrams; each diagram describes a particular system component or function. An IDEF diagram contains boxes and arrows that represent component functions or activities (boxes) and data that affect the activities or are produced by them (arrows).

IDEF decomposes the system from the top down. As illustrated in Figure A-1, we start with the overall system at a very limited general level of detail. As the IDEF analysis progresses, we narrow the focus of the parts of the system being analyzed and expand the level of detail. We stop the process when we reach the part of the system and level of detail we need for our research goals.

The IDEF analysis starts with the most general description of the system, represented in a diagram as a single box; that box is subsequently broken into a number of more detailed boxes, each of which represents a component part. The component parts are then detailed, each on another diagram, and so forth, until the system is described to the desired level of detail. Lower-level diagrams, then, are detailed breakdowns of higher-level diagrams. At each

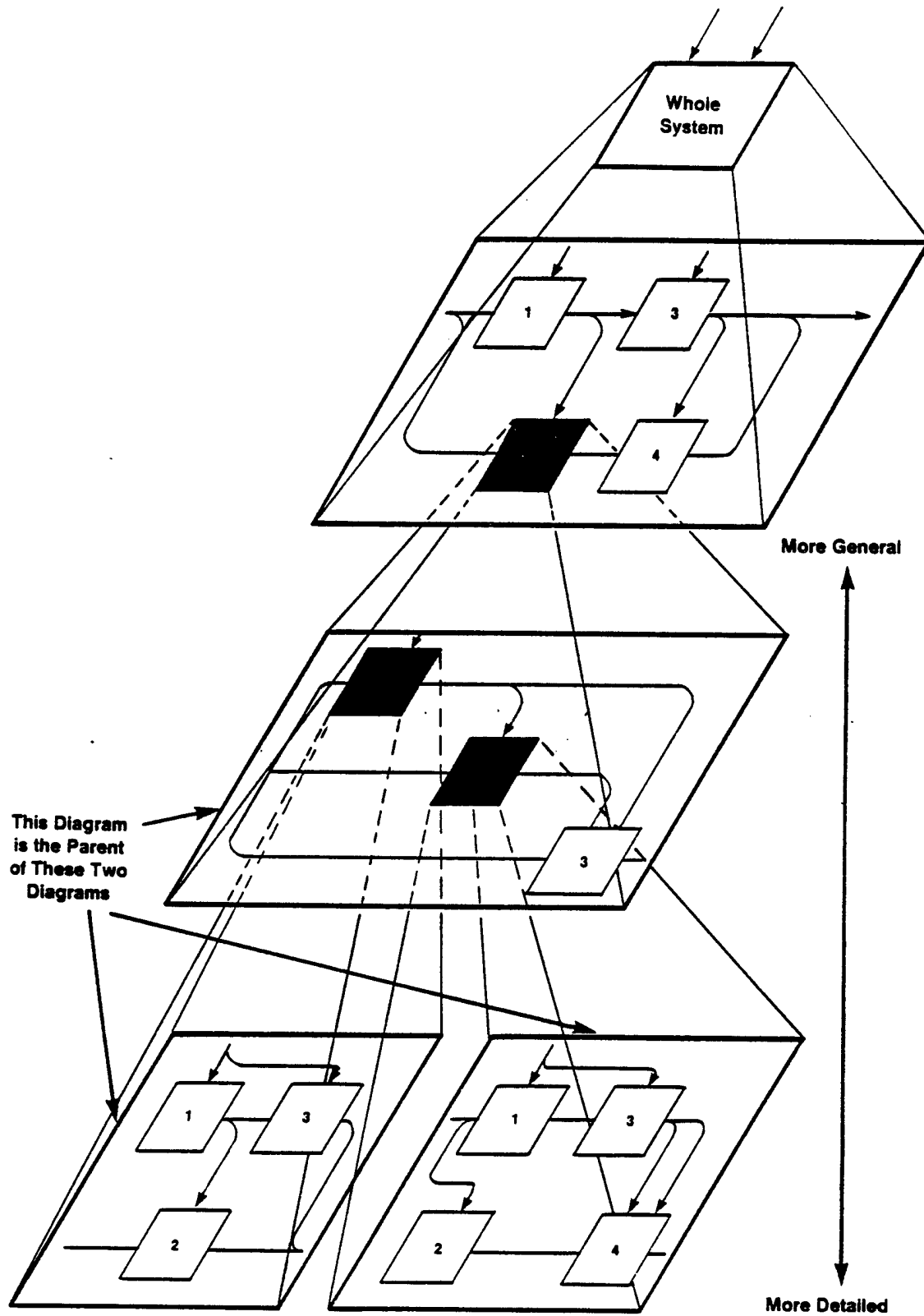


Figure A-1. Example of Hierarchical, Top-Down Model

stage, the higher-level diagram is the "parent" of the lower-level "detail" diagrams. Figure A-1 shows the relationship between diagrams at different levels.

IDEF diagrams use a two-page format. The subject diagram is shown on the top of the right page. The parent of the subject diagram, shown on the top of the left page, indicates the location of the subject node. On the bottom half of both pages is text describing the operations performed by each activity represented in the diagram. Each pair of pages receives a page number that is displayed as part of the subject diagram.

IDEF diagrams show the component parts as numbered boxes. The place of each diagram in a model is indicated by a "node number," derived from the numbering of boxes. For example, A21 is the diagram which details the first box (box 1) in the A2 diagram. Similarly, A2 details box 2 on the A0 diagram, which is the top diagram of the model. A node list, an index of diagram names in the hierarchy, serves as a table of contents.

The example shown in Figure A-2 shows that "Develop system" (A0) has three sub-functions, A1 through A3. "Design system" (A2) has three more detailed sub-functions (A21 through A23).

Description of IDEF diagrams. IDEF boxes represent system components (functions) and arrows represent relationships between them. Labels inside each box (verbs) and along each arrow (nouns) describe their meaning (Figure A-3). The arrow structure of an IDEF diagram represents a constraint relationship among boxes. It does not represent flow of control or sequence. The arrows entering a box show all that is needed by the box to perform its function. Therefore, the box is constrained by its inputs and controls.

The side where an arrow enters or leaves a box shows its role as an input, control, output, or mechanism for the box (Figure A-4). Arrows entering from the left represent inputs (raw materials or data used by the activity). The outputs are represented by arrows that emanate from the right side of the box. Arrows entering a box from the top represent controls on the activity. Controls are data that provide catalysts or constraints for the represented activity. Finally, arrows that enter a box from the bottom represent mechanisms. Mechanisms are the agents that perform the activities represented in the box. Inputs and outputs represent what is done by the process, controls represent why it is done, and mechanisms represent how it is done.

Some arrows show both their source and destination boxes on the same diagram, while others have one end unconnected (Figure A-5). The unconnected arrows represent inputs, controls, or outputs of the parent box. To find the source or destination of these unconnected arrows, the reader must locate the matching arrows on the parent diagram. All unconnected arrows must continue on the parent for the diagrams to be complete.

Although arrow connections from parent boxes to detail diagrams may be obvious from the labels, a special notation allows readers to match them. Unconnected arrows relate to the arrows in the parent diagram. The number of

LEVELS OF DIAGRAMS

CORRESPONDING NODE INDEX

A-0 Develop System
A0 Develop System
A2 Design System

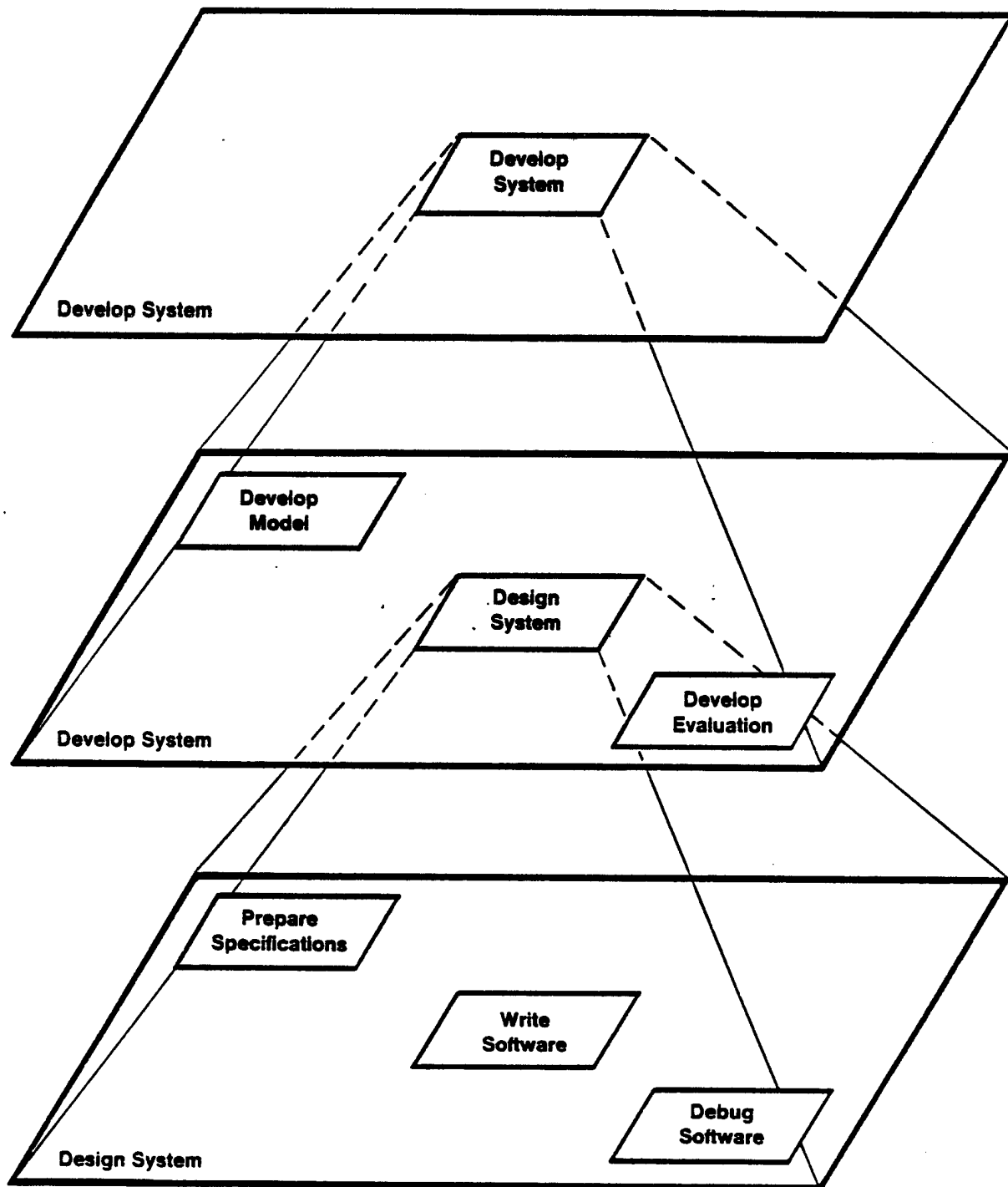


Figure A-2. IDEF Node Numbering Convention

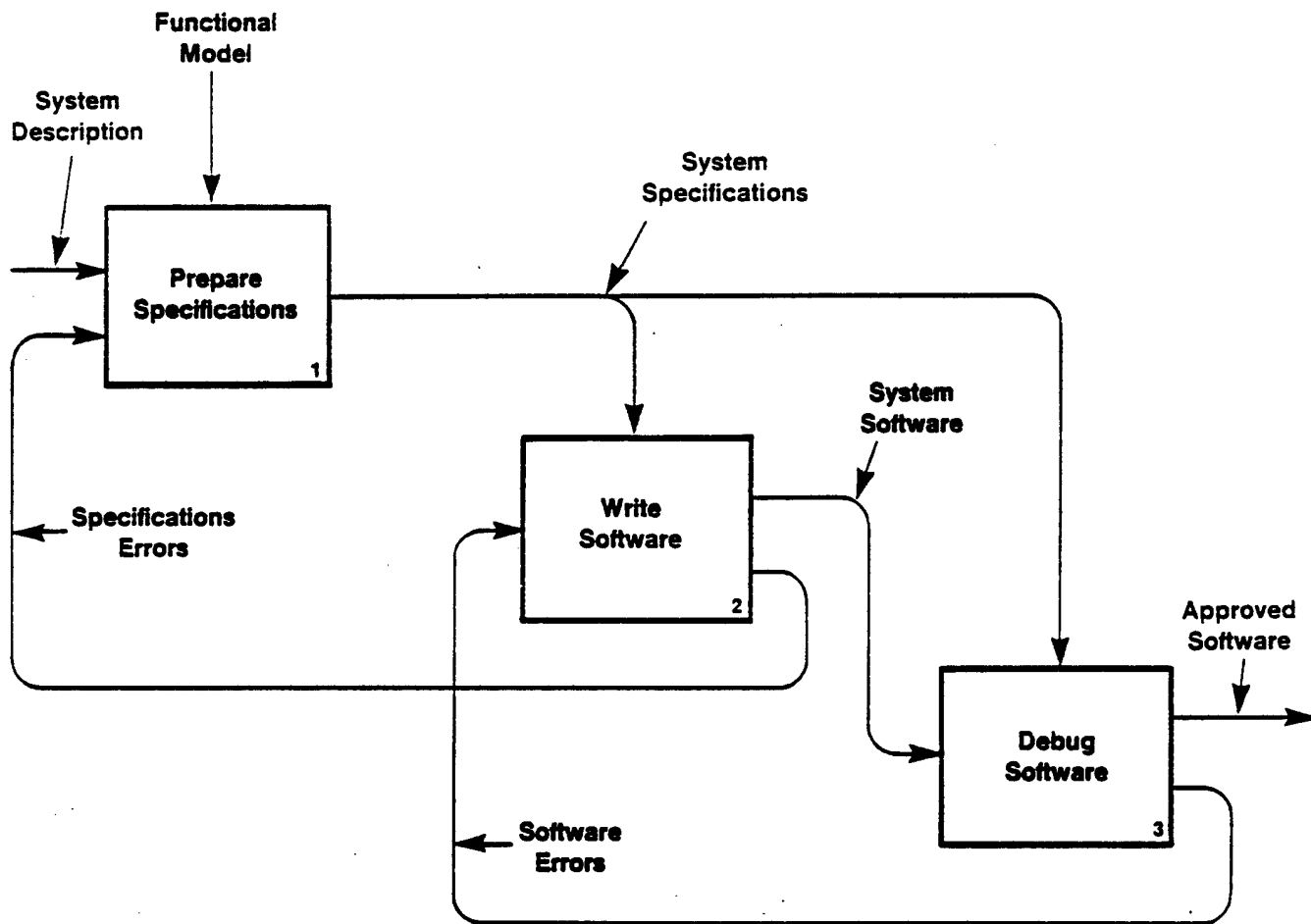


Figure A-3. Sample IDEF Diagram

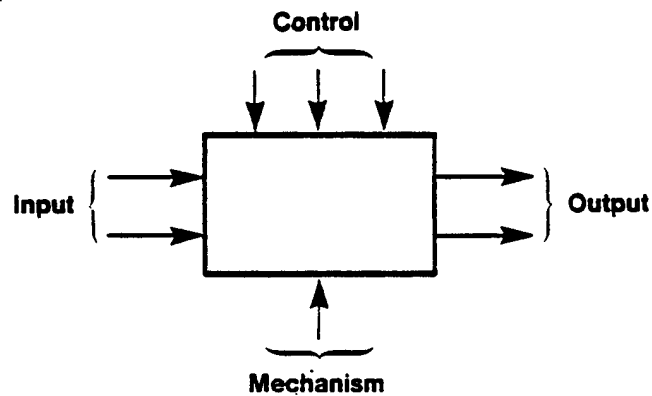


Figure A-4. Sample IDEF Diagram Showing Box and Arrow Syntax

the arrow is preceded by an I, C, M, or O to indicate that it represents a input, control, mechanism, or output in the original diagram. Thus, if an arrow is labeled "C1," it is the first control listed in the original diagram. Similarly, an arrow labeled "O3" is the third output in the original diagram.

Some data elements serve as input to some subactivities, and controls for others. In this case, the data are represented as a control in the parent diagram, and both as a control and input in the detailed diagram. Both the input and control arrows in the detailed diagram will have the label that corresponds to the control in the parent diagram (e.g., C2).

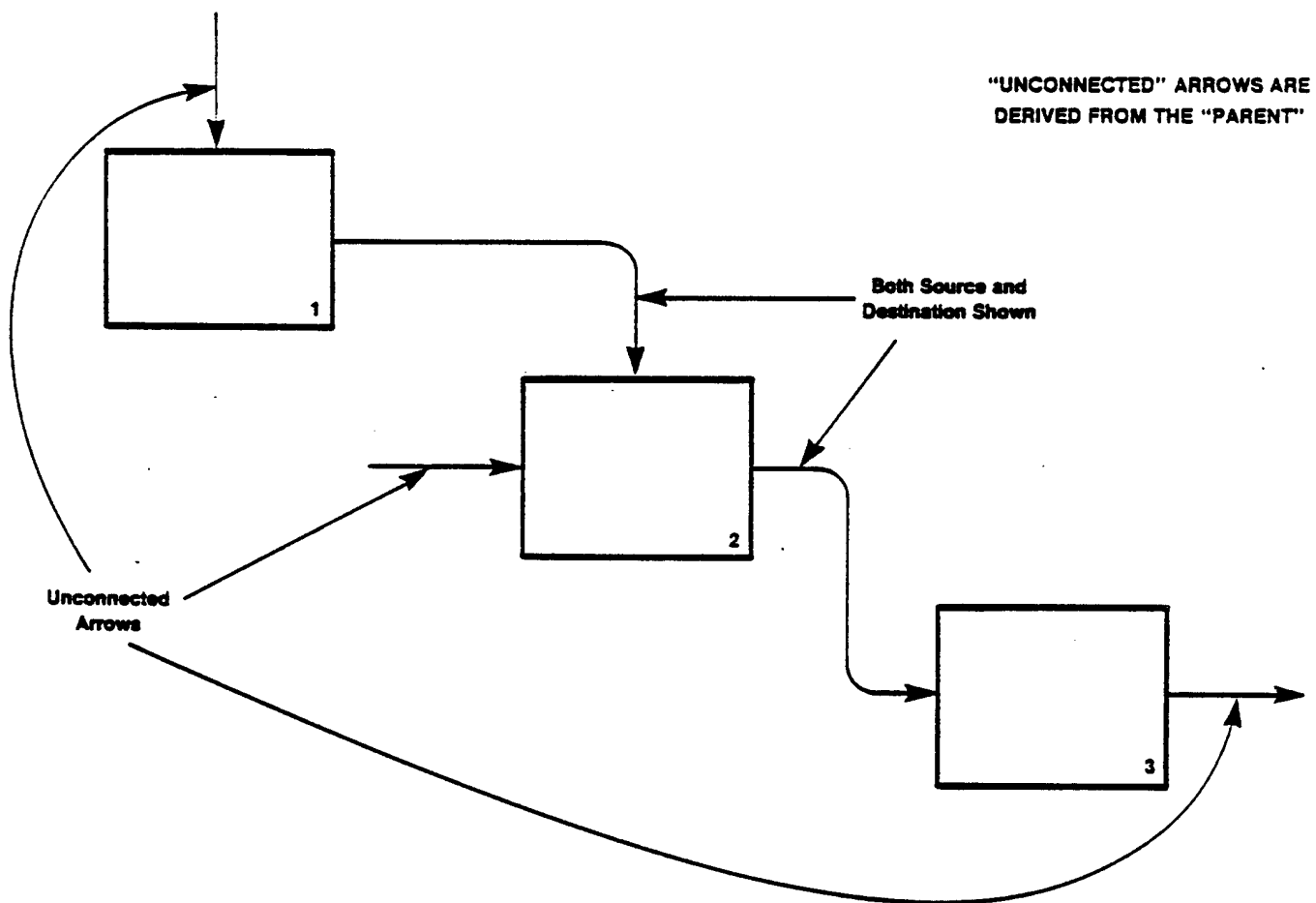


Figure A-5. Sample IDEF Diagram Showing Source and Destination

OVERVIEW

Preliminary analysis. We now move from a general description of the IDEF method to the specific analysis for the Army civilian personnel system as part of the National Security System. As shown on Figure A-6, the IDEF Tree for this application, we begin with the National Security System when "one box" function is produced. In this plan we present only preliminary analyses of the top levels of the structure. This section shows the format for tables that summarize information about the structure nodes, data, and functions. This product includes an IDEF node list, a graphic representation of node hierarchy, and a brief description of each node.

We begin with the National Security System (NSS) and decompose it until we come to a function called "Provide Civilian Manpower." We will then decompose all elements as they relate to the civilian personnel system.

This system description illustrates the major processes in the Army civilian personnel management system. It uses IDEF as an analytic and descriptive tool. Each Army civilian personnel management function or process is divided, hierarchically, to the smallest elements necessary for the appropriate understanding of that process. Each diagram is accompanied by text that describes what is represented in the diagram.

Figure A-7 shows the node hierarchical structure for the IDEF application. Ten nodes comprise the analyses. On Figure A-7 nodes at the same level with the same parent are at the same level of indentation. Figure A-7 can serve as an index to the IDEF analyses.

Node A-0 is the overall, single box system. Node A0 decomposes Node A-0 into its primary components. "Develop Forces" is box 4 on Node A-0 and becomes Node A-4. Single node decomposition continues until we reach Node A4123, "Provide Civilian Manpower." We decompose that node into its three components A41231 "Acquire CM," A41232 "maintain WF," A41233 "Process Losses." Each of these nodes is described. We further describe one node of Maintain Workforce, Node A412322, "Manage Local Workforce."

Preliminary Structure

The following IDEF structure provides the results of our initial IDEF analysis. We presented it to ARI, DCP, and other designated officials for review, modification and approval.

IDEF model organization and format. IDEF is a systems analysis technique that enables people to understand complex systems, and to communicate their understanding to others. IDEF describes the functions performed by the system by successively decomposing the system into its basic components, describing how each component processes information, and specifying how different components interact. An IDEF model is expressed as a series of related diagrams; each diagram describes a particular system component or function. An IDEF diagram contains boxes and arrows that represent component functions or

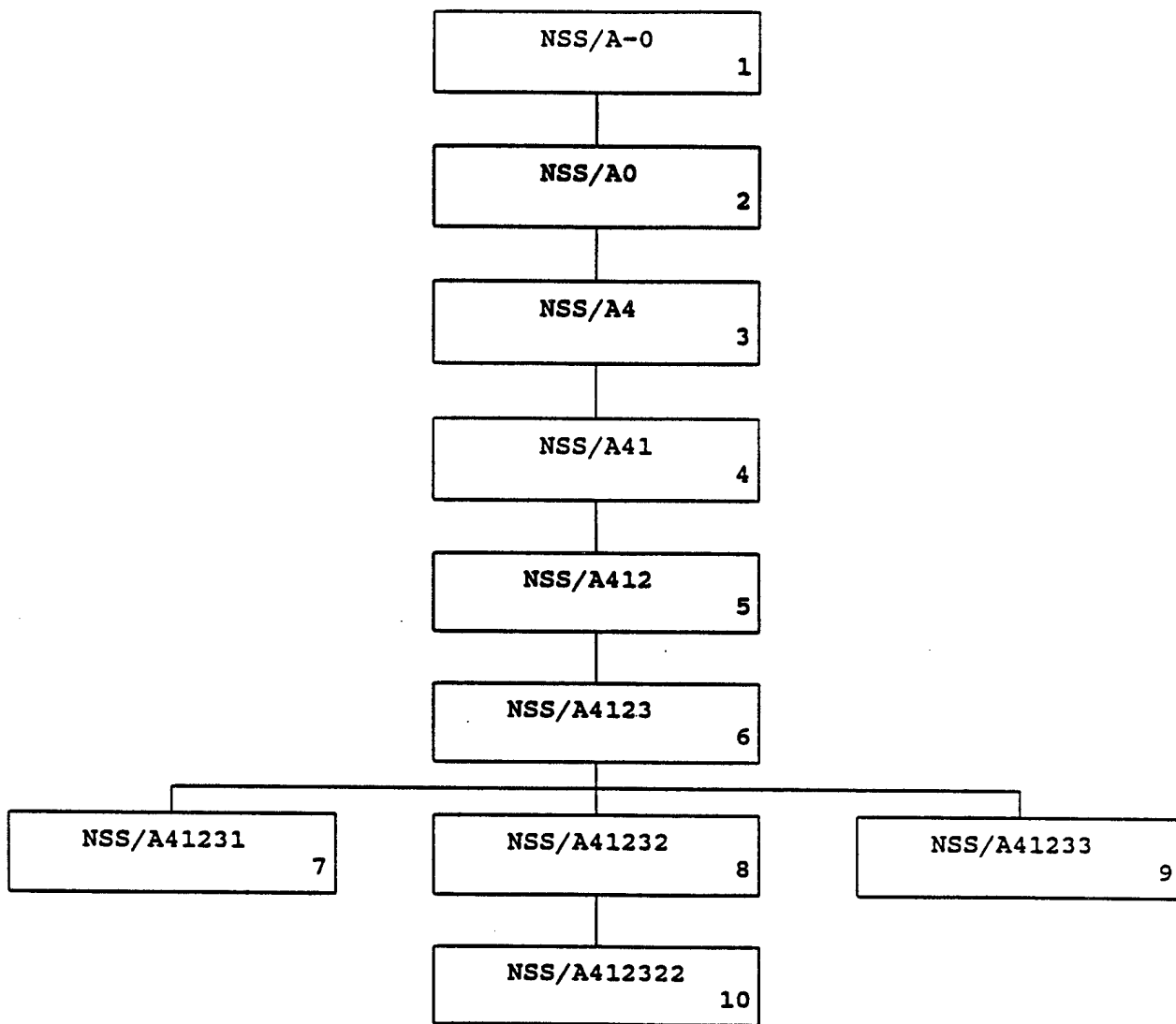


Figure A-6. IDEF Node Numbering Convention

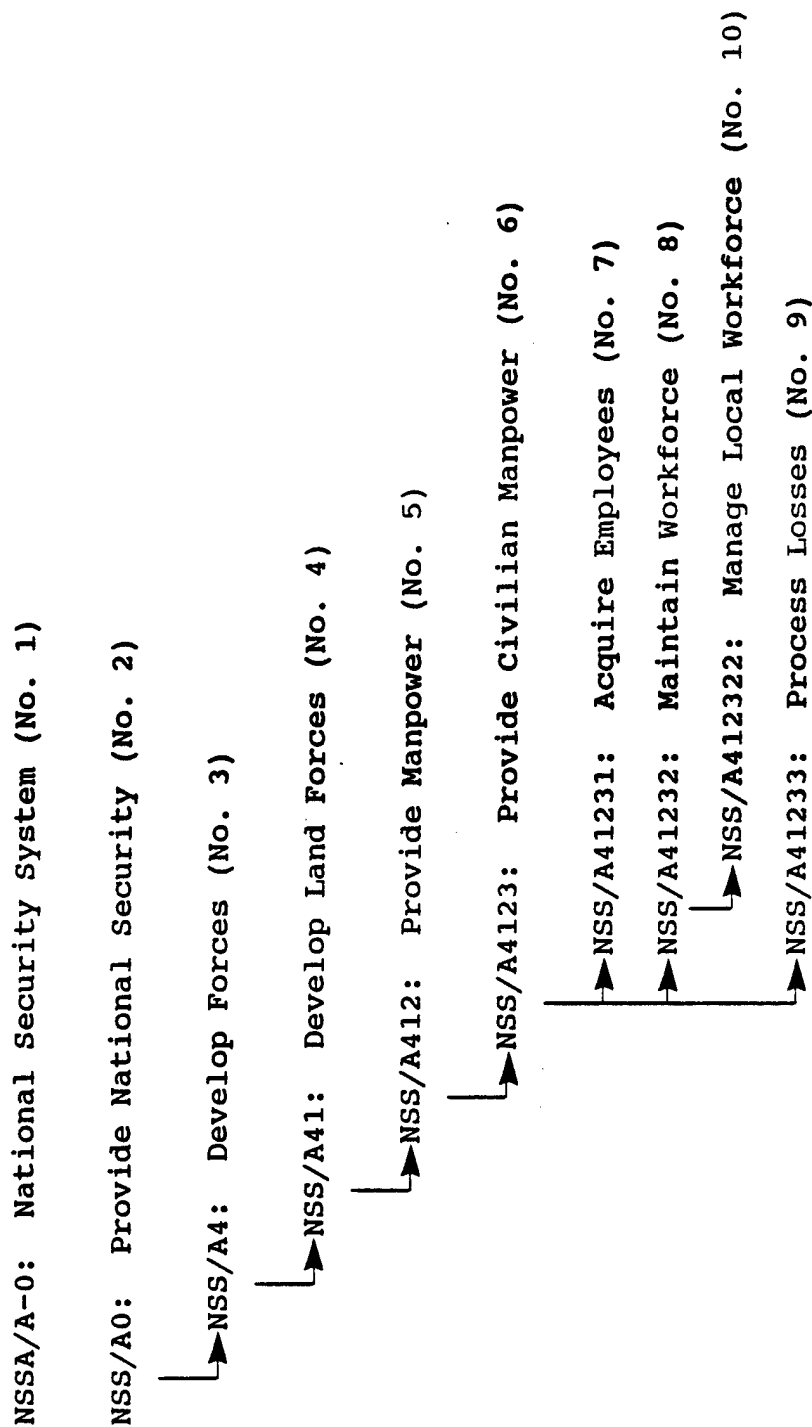


Figure A-7. IDEF Node List for the National Security System Description

activities (boxes) and data that affect the activities or are produced by them (arrows).

Although arrow connections from parent boxes to detail diagrams may be obvious from the labels, a special notation allows readers to match them. Unconnected arrows are numbered according to the position of those arrows in the parent diagram. The number of the arrow is preceded by an I, C, M, or O to indicate that it represents a input, control, mechanism, or output in the parent diagram. Thus, if an arrow is labeled "C1," it is the first control listed in the parent diagram. Similarly, an arrow labeled "O3" is the third output in the parent diagram.

Some data elements serve as input to some subactivities, and controls for others. In this case, the data are represented as a control in the parent diagram, and both as a control and input in the detailed diagram. Both the input and control arrows in the detailed diagram will have the label that corresponds to the control in the parent diagram (e.g., C2).

Preliminary analysis of the Army civilian personnel system functions. In this plan we present only preliminary analyses of the top levels of the structure. This section shows the format for tables that summarize information about the structure nodes, data, and functions.

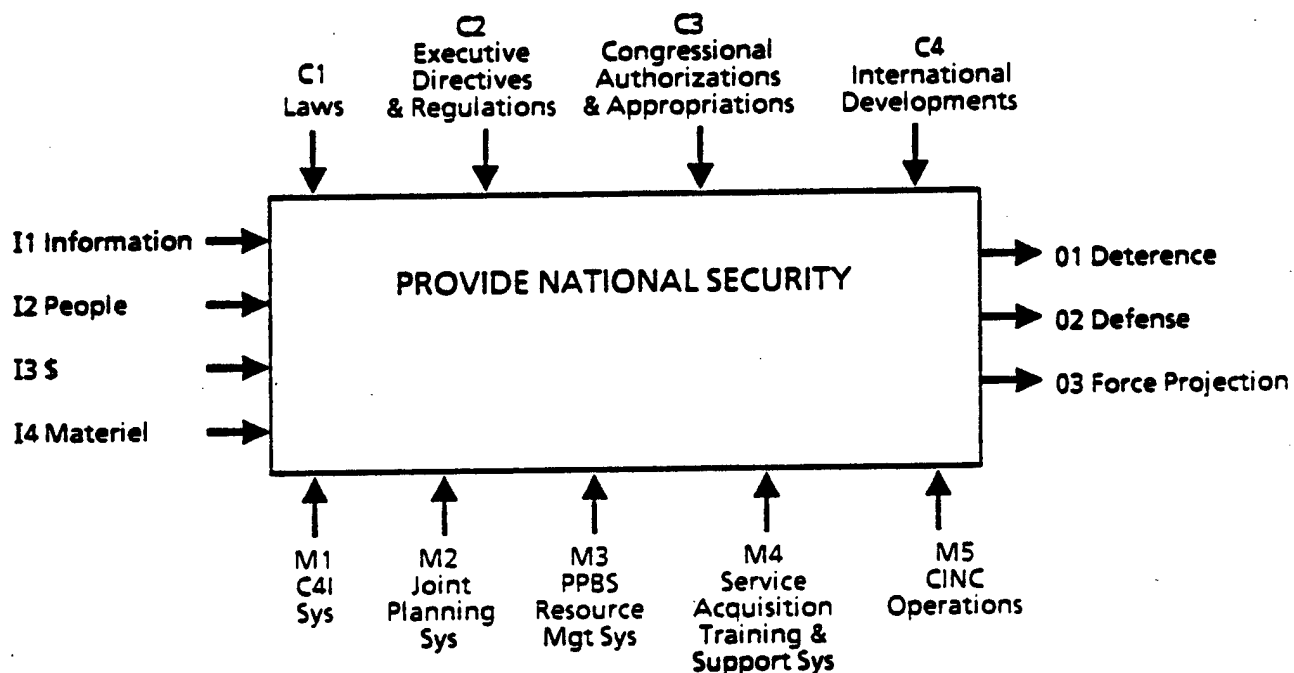
This system description illustrates the major processes in the Army civilian personnel management system. It uses IDEF as an analytic and descriptive tool. Each Army civilian personnel management function or process is divided, hierarchically, to the smallest elements necessary for a full understanding of that process. Each diagram is accompanied by text that describes what is represented in the diagram.

NSS/A-0 NATIONAL SECURITY SYSTEM (No. 1)

The purpose of the National Security System is to provide national security to the United States. It involves all of the government agencies that contribute to national security, but the primary agency is the Department of Defense.

In providing national security, the function must establish national security objectives, assess potential threats, make national security decisions, develop forces, and execute the national security policy.

The outputs of the process are deterrence, defense, and force projection. Deterrence prevents potential adversaries from taking actions that threaten the security of the United States by making the potential adversaries consider the potential benefit from their adverse action not worth the risks that they would incur. Defense provides the ability to withstand the adverse actions if they are taken. Force projection provides the means to implement offensive national security policies.



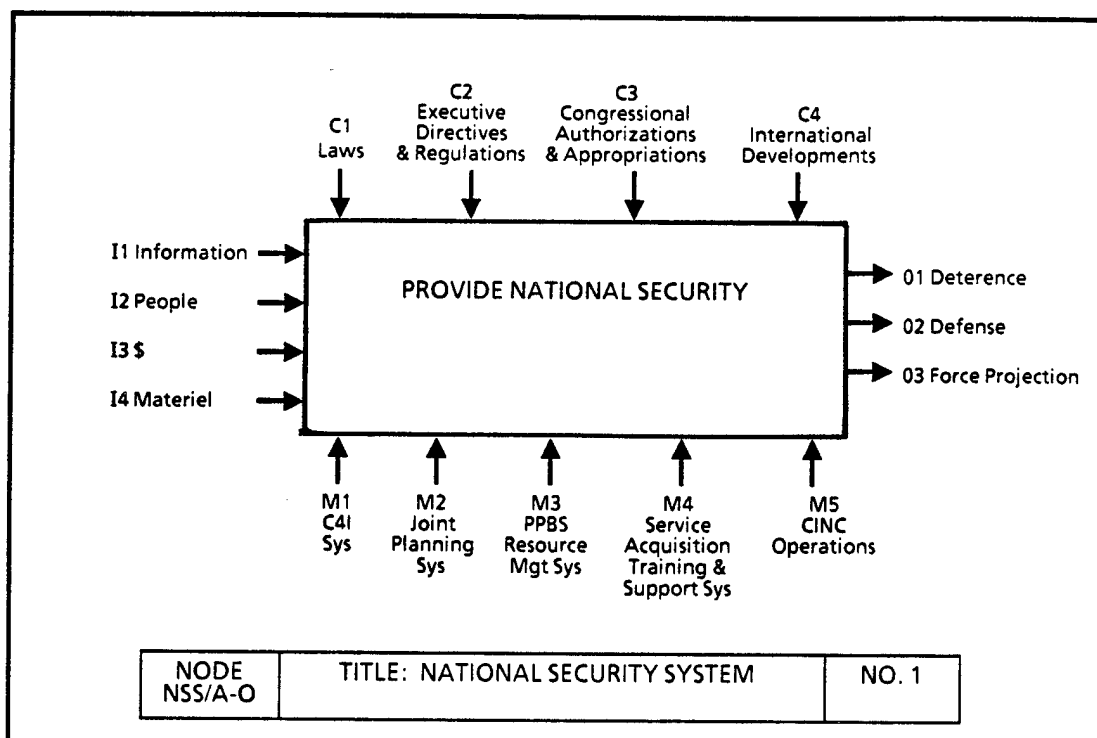
NODE NSS/A-O	TITLE: NATIONAL SECURITY SYSTEM	NO. 1
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342-0001

The four major controlling components from outside the system are: (1) Laws, (2) Executive Directives and Regulations, (3) Congressional Authorizations and Appropriations, and (4) International Developments.

The national security system employs the following five major mechanisms to provide national security: (1) Command, Control, Communications, Computers, and Intelligence (C4I); (2) The Joint Planning System, (3) Resource Management Systems; (4) the Military Services Acquisition, Training, and Supports Systems; and (5) the Operations of the Unified and Specified Commanders.

The National Security System provides national security using national resources and the above mechanism and controls. The national resources input to the system include information, people, materiel, and dollars.



342-0001

NSS/A0 PROVIDE NATIONAL SECURITY (No. 2)

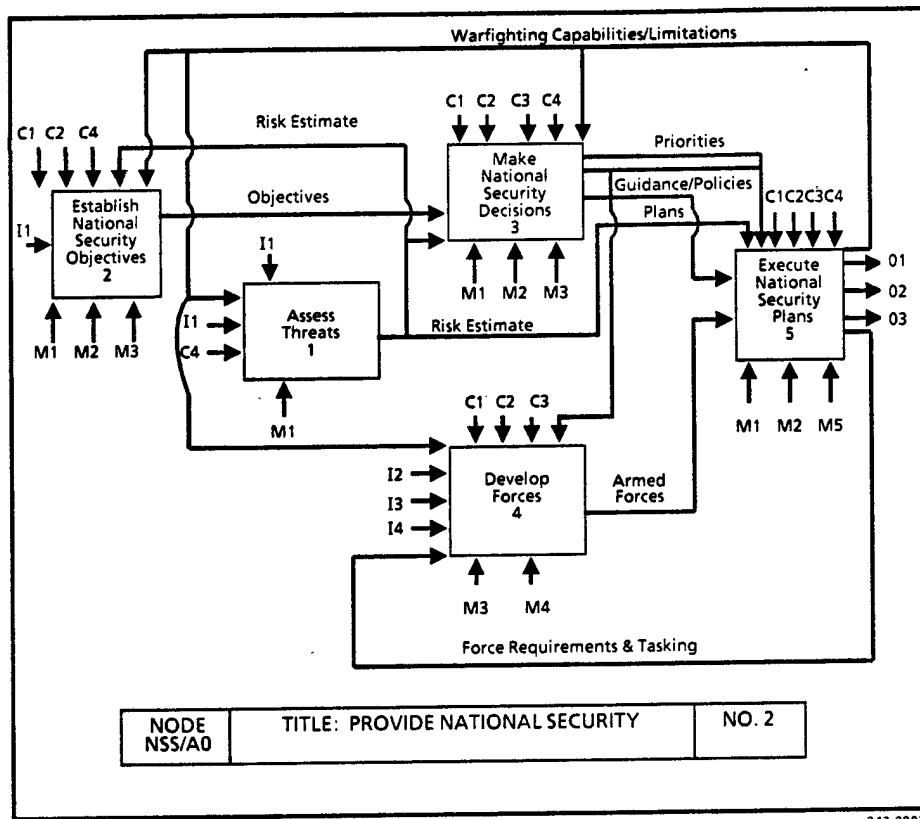
This figure decomposes NSS/A-0, showing the five primary components needed to provide national security.

NSS/A1 ASSESS THREATS.

The C4I systems provide information on international developments and other factors that are potential threats to national security. The National Command Authority and risk evaluators at lower levels make estimates of the risk to national security of specific situations as they develop. They make these estimates in the context of the world situation as provided by the C4I systems and other available information. The validity, availability, and credibility of the information represent the major constraint of the risk assessment process. The resulting risk estimates are inputs to national security decision making and represent major constraints on establishing objectives and executing national security plans and policies.

NSS/A2 ESTABLISH NATIONAL SECURITY OBJECTIVES.

This function focuses on the ultimate goals of the national security process. It processes information using the C4I, Joint Planning and Resource Management mechanisms to produce national security objectives. In addition to the Executive and Congressional controls shown on the parent node, it must consider the risk assessment and international developments (to include the potential effect its objectives may have on international relations and the world situation). The last constraints on objectives are the nation's warfighting capabilities and limitations. This stage in the process considers capabilities and limitations in a very general sense.



NSS/A3 MAKE NATIONAL SECURITY DECISIONS.

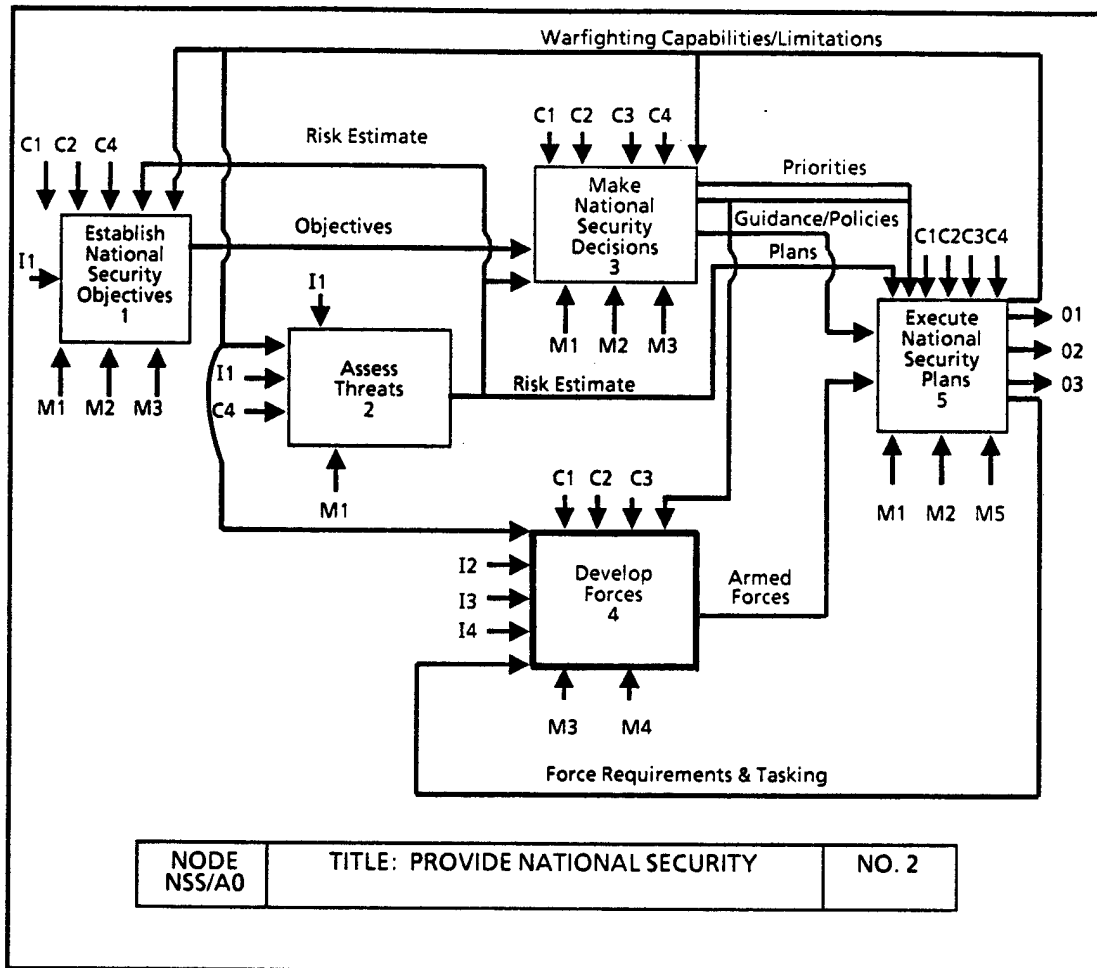
This function focuses on specific decisions to control the use of forces to achieve the nation's security objectives in view of the existing threats, capabilities, and limitations. At the highest level this function is performed by the National Command Authority. The decision-makers at all levels use the information, planning, and management systems available to them to make and communicate their decisions.

NSS/A4 DEVELOP FORCES.

The Armed Services have the responsibility to create, prepare, and deploy armed forces. The inputs are people, materiel, and money. The primary mechanism are their acquisition, training and support systems. They use their resource management systems to control the flow of resources to their primary force development systems. The remaining IDEF analysis focuses on decomposing functions in this node.

NSS/A5 EXECUTE NATIONAL SECURITY PLANS.

This node uses the armed forces to execute national security plans subject to the priorities, guidance, policies, risk assessments, and international developments. At the highest level, this function is performed by the Unified and Specified Commanders and their respective staffs. The CINCs and their operational commanders in the field depend on the C4I for operational information and intelligence and on the joint planning systems for operational plans. This node provides three major outputs: (1) deterrence, (2) defense, and (3) force projection and two additional outputs: (1) the operational assessment of the nation's warfighting capabilities and limitations, and (2) the force requirements and tasking. These outputs are important inputs and constraints to other nodes in the system.

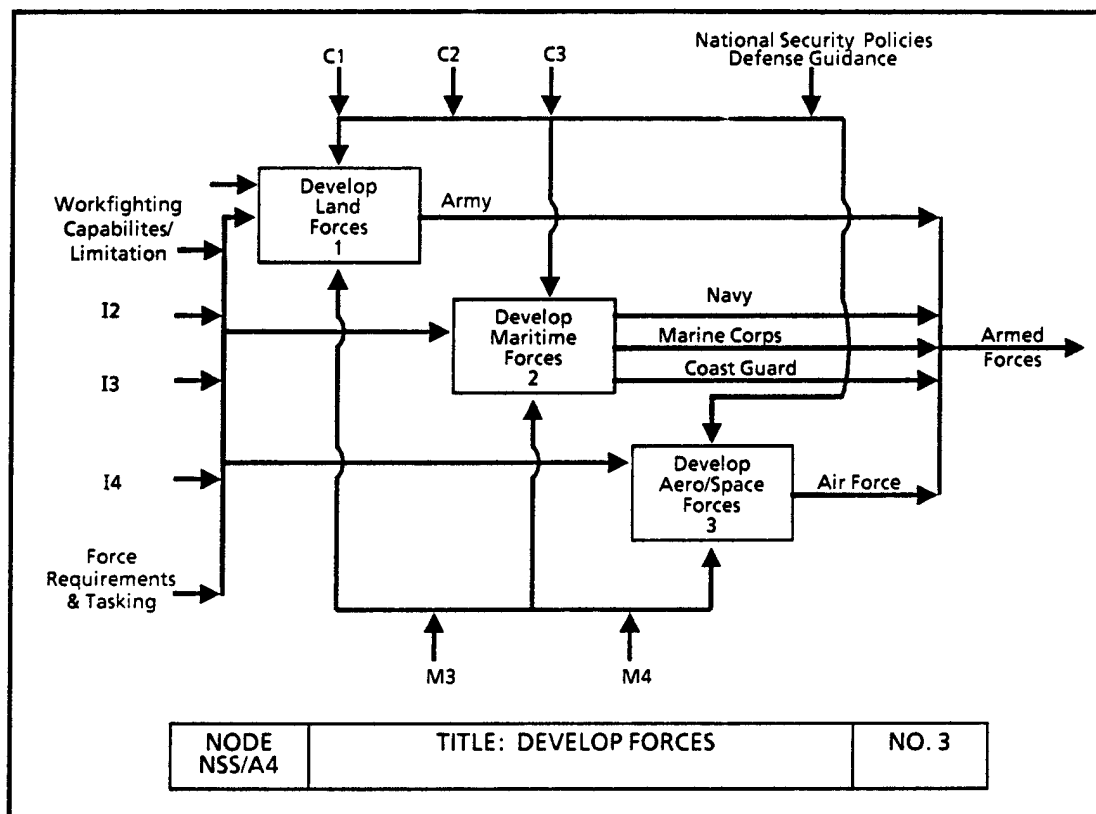


342-0003

NSS/A4 DEVELOP FORCES (No. 3)

This node creates, prepares, and deploys the armed forces. This process is divided into the three major kinds of forces: (1) land forces, (2) maritime forces, and (3) aero/space forces. Each is performed by separate Military Departments. The Department of the Army provides land forces, the Department of the Navy provides the maritime forces, and the Department of the Air Force provides the aero/space forces. As shown on the parent diagram, people, materiel, money, warfighting capabilities and limitations, and force requirements and tasking are inputs to each of the three nodes in this diagram.

Each of the Military Departments uses its resource management and acquisition, training and support systems to buy all of the materiel, recruit and train all of the people, and develop all of the operational military units needed for its output. The outputs are the armed forces.

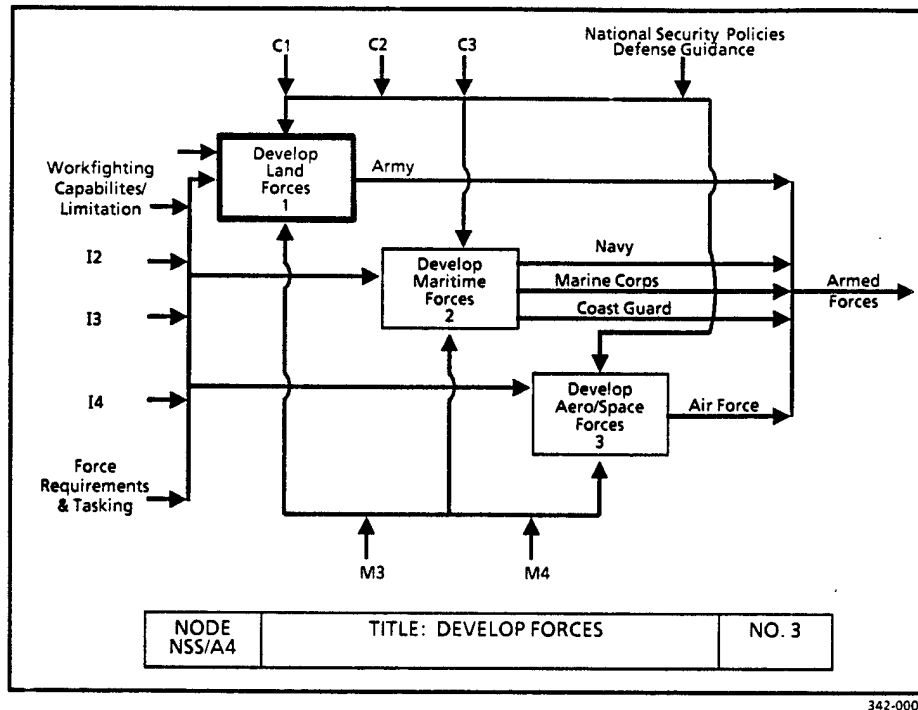


342-0002

NSS/A41 DEVELOP LAND FORCES. The output is the U.S. Army. The subsequent IDEF development will concentrate on this node.

NSS/A42 DEVELOP MARITIME FORCES. This node develops the U.S. Navy, U.S. Marine Corps, and U.S. Coast Guard. Note that the Coast Guard is under the Department of Treasury during peace time and has other missions, but its national security mission places it in this node.

NSS/A43 DEVELOP AERO/SPACE FORCES. This node develops the U.S. Air Force.



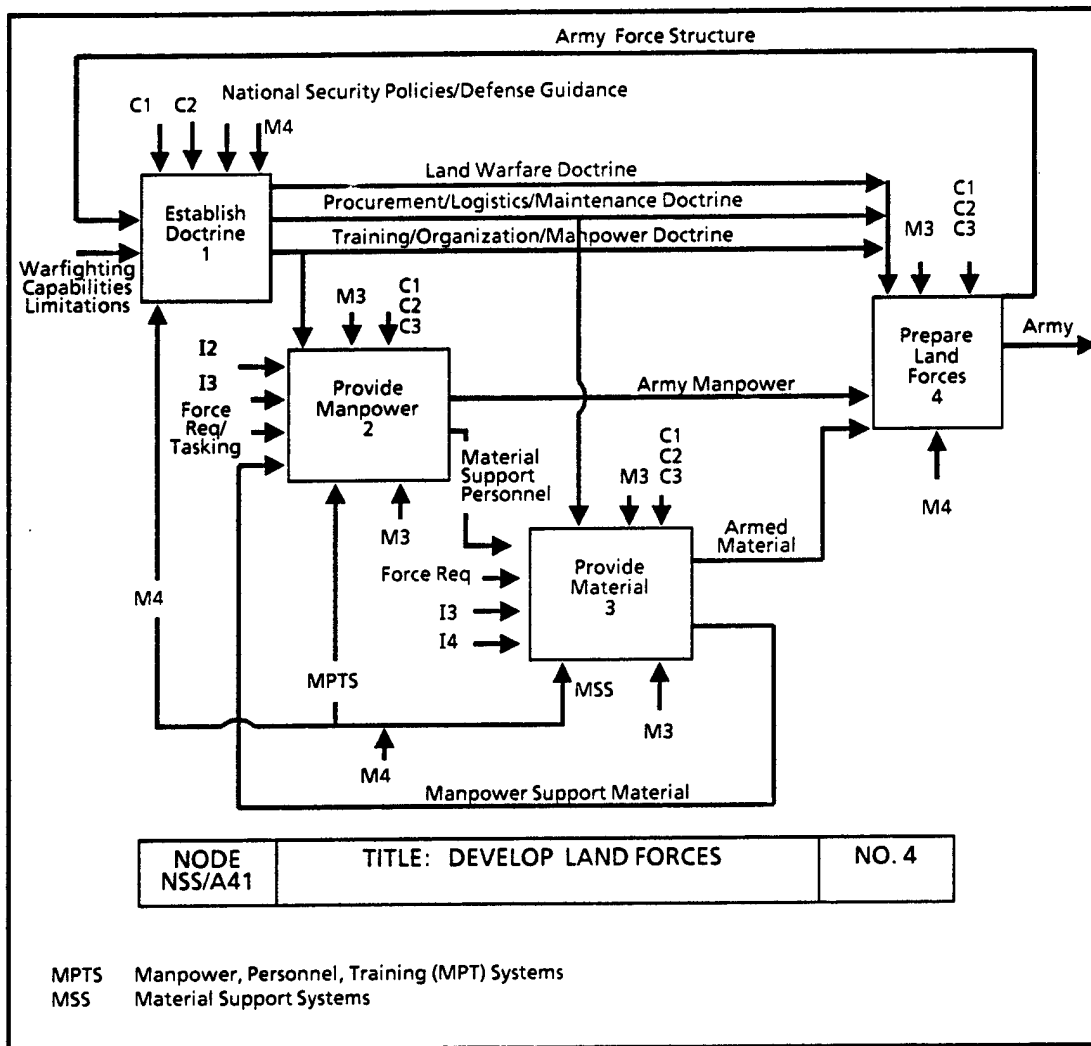
342-0002

NSS/A41 DEVELOP LAND FORCES (No. 4).

This node creates, prepares and deploys the U. S. Army using the following four processes: (1) Establish Doctrine, (2) Provide Manpower, (3) Provide Materiel, and (4) Prepare Land Forces.

NSS/A411 ESTABLISH DOCTRINE. This function takes inputs of the existing Army force structure and its warfighting capabilities and limitations and establishing doctrine to control all aspects of developing and employing an Army. This doctrine controls all of the other functions in this node. The relevant laws, regulations, directives, policies, guidance, and PPBES decisions serve as constraints of this function. The overall doctrine is established at the national Army level by Headquarters Department of the Army and the Training and Doctrine Command, but every level in the Army exercises some aspects of this function by interpreting higher level doctrine and determining how it and its subordinate elements will carry out their responsibilities.

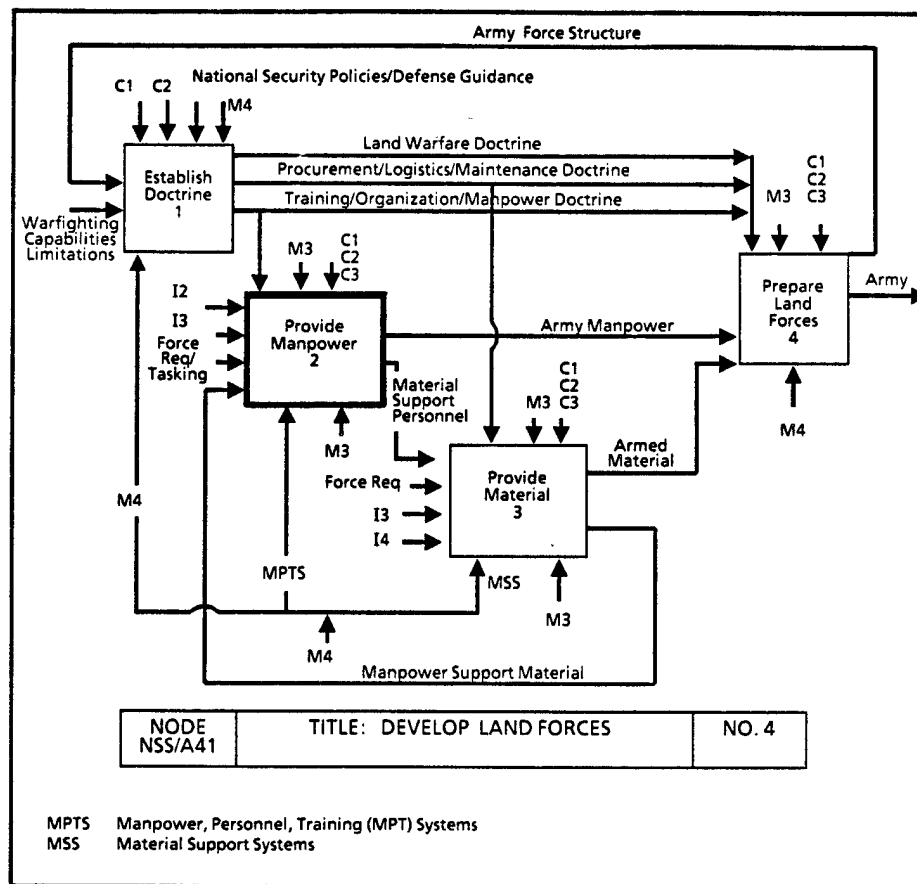
NSS/A412 PROVIDE MANPOWER. This function provides all of the people needed by the Army for all of the Army's various functions. The out put includes soldiers (officer and enlisted, active and reserve component), civilian workers (general schedule and wage board civil service, various host nation support and other foreign nationals, non-appropriate fund activity personnel), and contractor support labor. In addition to people, materiel, and money, this function uses the force requirements and tasking from all levels of the Army and those who employ the Army in the field. The rest of this IDEF procedure will decompose this node.



342-0004

NSS/A413 PROVIDE MATERIEL. This function acquires, catalogs, controls, stores, distributes, maintains, collects, repairs, and disposes of all of the things that the Army needs from multi-billion dollar weapon systems to toilet paper.

NSS/A414 PREPARE LAND FORCES. This function takes Army manpower and materiel and combines them into effective organizations and units to provide all of the combat, combat support and support missions of the Army. It deploys the organizations to where they are needed, provides unit training, and does all of the functions necessary to prepare and deliver effective combat forces to the unified and specified operational commanders in the field. Its output is the United States Army.

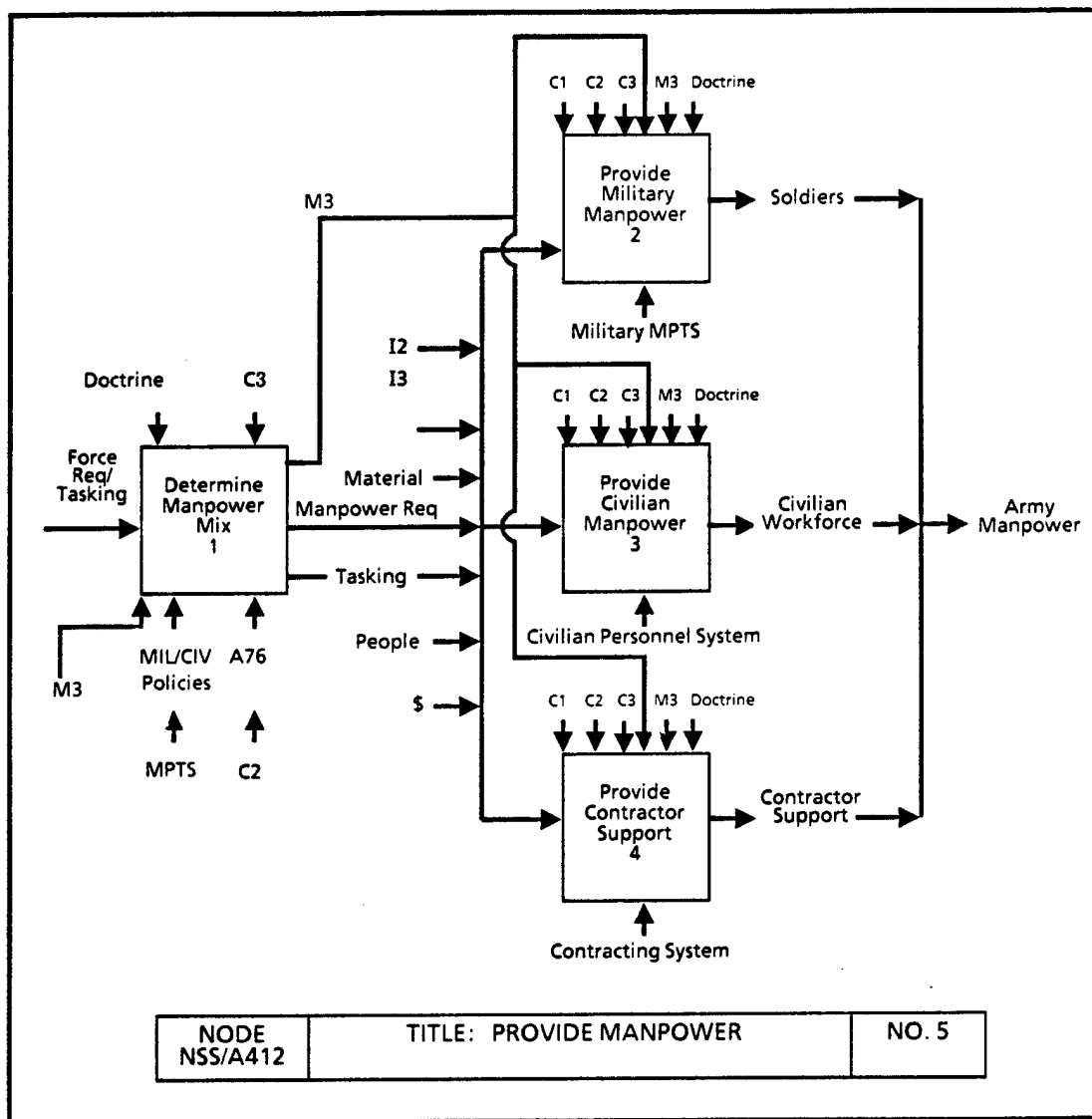


NSS/A412 PROVIDE MANPOWER (No. 5)

This node consists of the following four functions: (1) determine the manpower mix among military, civilian, and contractor personnel; (2) provide military manpower; (3) provide civilian manpower, and provide contractor support. The output is all of the labor used by the Army in all of its functions. The major inputs are all of the force requirements and tasking imposed on the Army by outside authorities, people, materiel, and money.

NSS/A4121 DETERMINE MANPOWER MIX. This function uses the PPBES system, the military-civilian policies of the MPTS, and OMB Circular A-76 procedures under constraint of Army doctrine, DoD policy, and Congressional authorizations and appropriations to convert force requirements and tasking into labor requirements for military, civilian, and contractor personnel. Manpower allocations and dollars are allocated to the three manpower providing systems through the PPBES process and become constraints on the operation of each of those systems. Through participation in the PPBES and through military-civilian and A-76 decisions, all levels participate in this mix determination process. Some aspects of the civilian-military relations issues appear in this process. They include deciding who will perform what functions and who will supervise whom in what relationships.

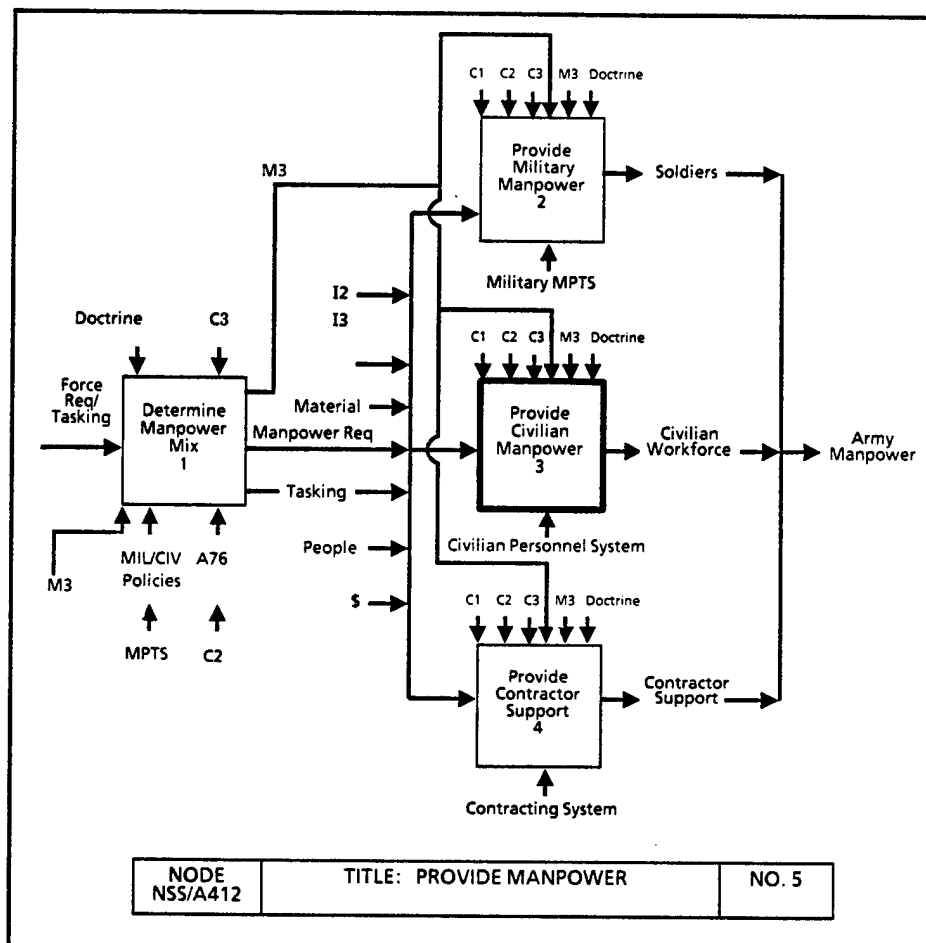
NSS/A4122 PROVIDE MILITARY MANPOWER. This is a highly centralized personnel system that establishes military requirements by MOS and grade (or skill level), recruits, trains, assigns, reassigns, promotes, disciplines, and discharges soldiers. It includes officers and enlisted personnel of the active and reserve components. Many of the manpower and personnel functions are performed worldwide for all of the Army.



342-0008

NSS/A4123 PROVIDE CIVILIAN MANPOWER. The civilian personnel system is very decentralized with most personnel functions performed at a local level for only a small portion of the Army. This node produces the civilian workforce for the Army. The workforce includes those who leave the system each year and the benefits they and their survivors are entitled to (often for the rest of their lives). The remainder of the IDEF process concentrates on decomposing this function.

NSS/A4124 PROVIDE CONTRACTOR SUPPORT. This is the least centralized and the least controlled of the labor sources available to the Army. The people work for private corporations under contract with the Army to provide various products or services. The controls are almost exclusively on the contracting process rather than the personnel system of the contractors. The Army has relatively little control over the individuals employed by the contractor, but also is free of the personnel management responsibilities required by the other systems.

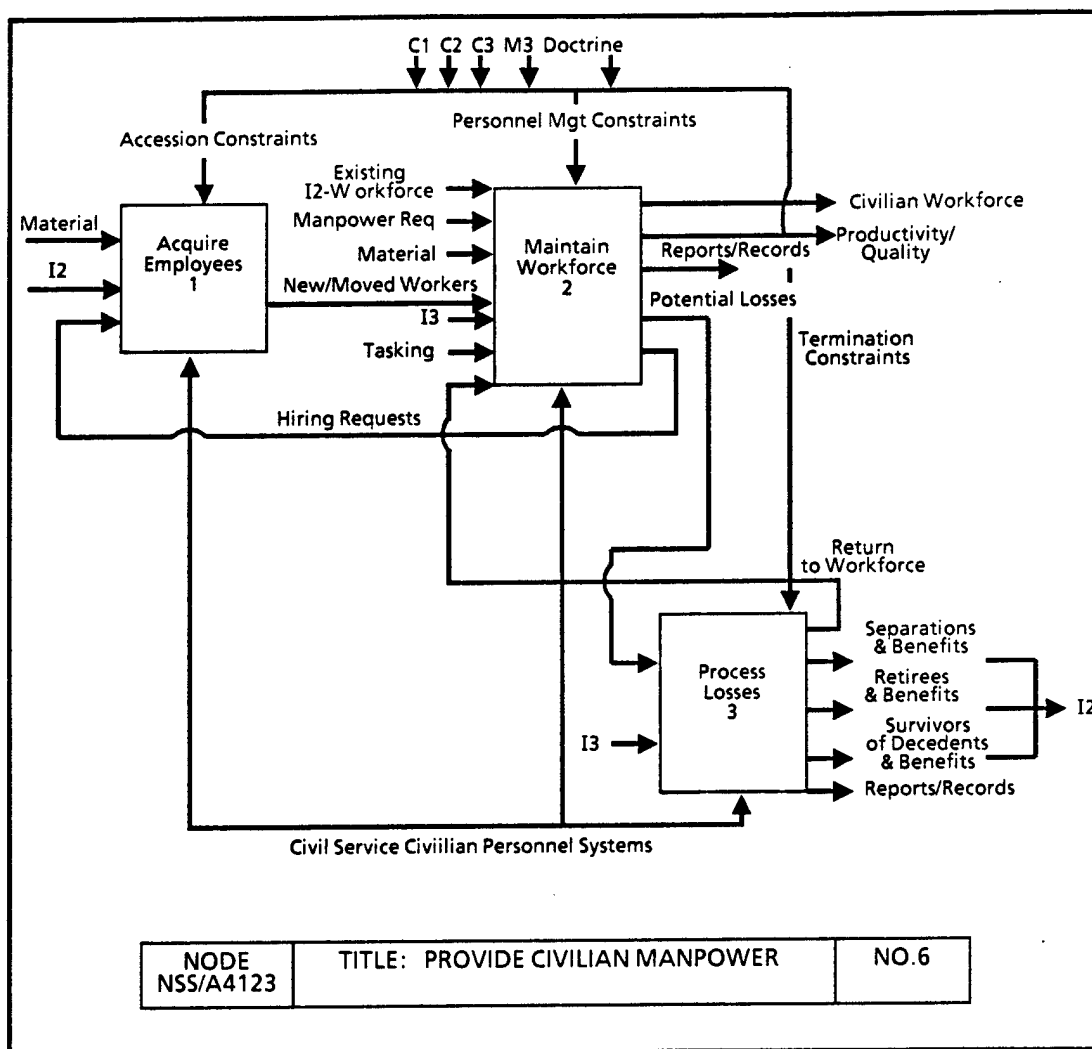


342-0008

NSS/A4123 PROVIDE CIVILIAN MANPOWER (No. 6)

This function is decomposed into three nodes: (1) acquire employees, (2) maintain the workforce, and (3) process losses. All three of these functions are of direct interest to this research effort and each will be decomposed in turn.

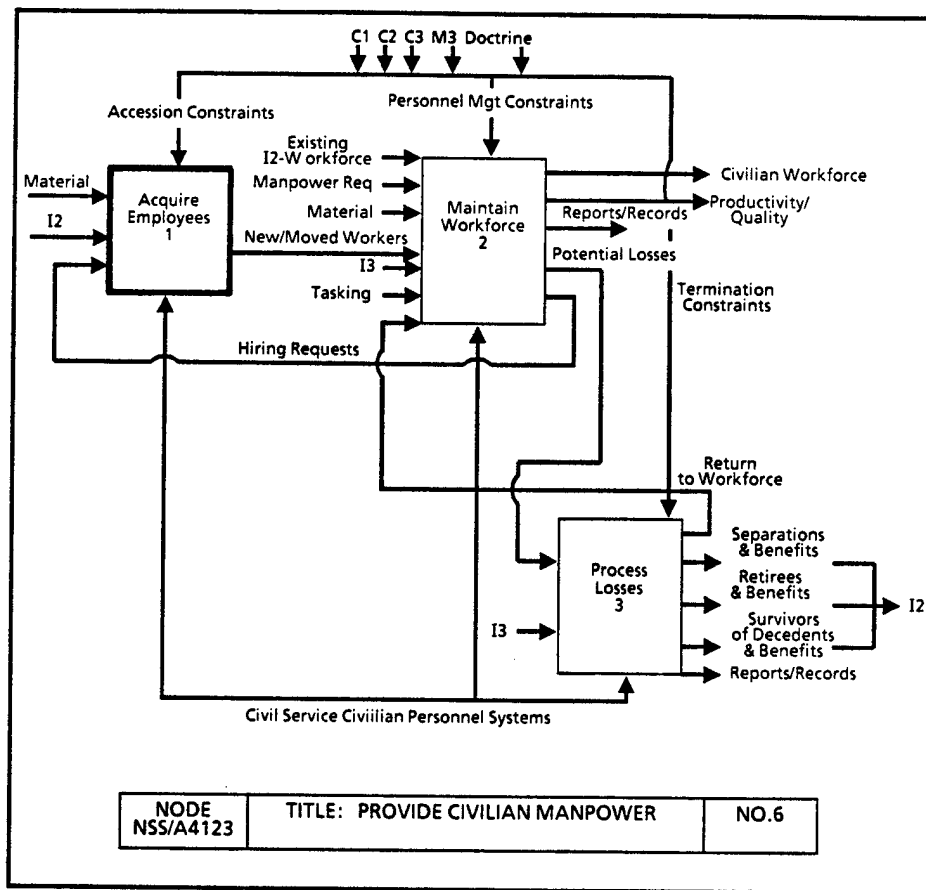
NSS/A41231 ACQUIRE EMPLOYEES. This process turns hiring requests into vacancies, solicits applicants to fill those vacancies, qualify the applicants and selects the best qualified on a position-by-position basis. Its primary input is people (including those already in the Army civilian workforce, in other government organizations, and outside the Federal workforce). The outputs are workers, and the mechanisms are the Civil Service and other civilian personnel systems available to the Army.



342-0009

NSS/A41232 MAINTAIN WORKFORCE. This node performs both manpower and personnel functions. The manpower functions provide national level management of the decentralized civilian manpower and personnel systems, local operation of those systems, supervision of the workers, and the actual performance of work. The output is productivity, high quality work, the civilian workforce, and potential losses from that workforce. Among its personnel functions, this node determines who will continue in the workforce and who wants to or should be removed from the workforce.

NSS/A41233 PROCESS LOSSES. The civil service laws provide every individual selected for separation from the civilian workforce the right to internal and external review of his or her rights, situation, and circumstances. Therefore, processing losses is shown as a separate part of the system. The outputs include people returned to the workforce and survivors, retirees (voluntary, mandatory, and disability), and separations and their respective benefits.



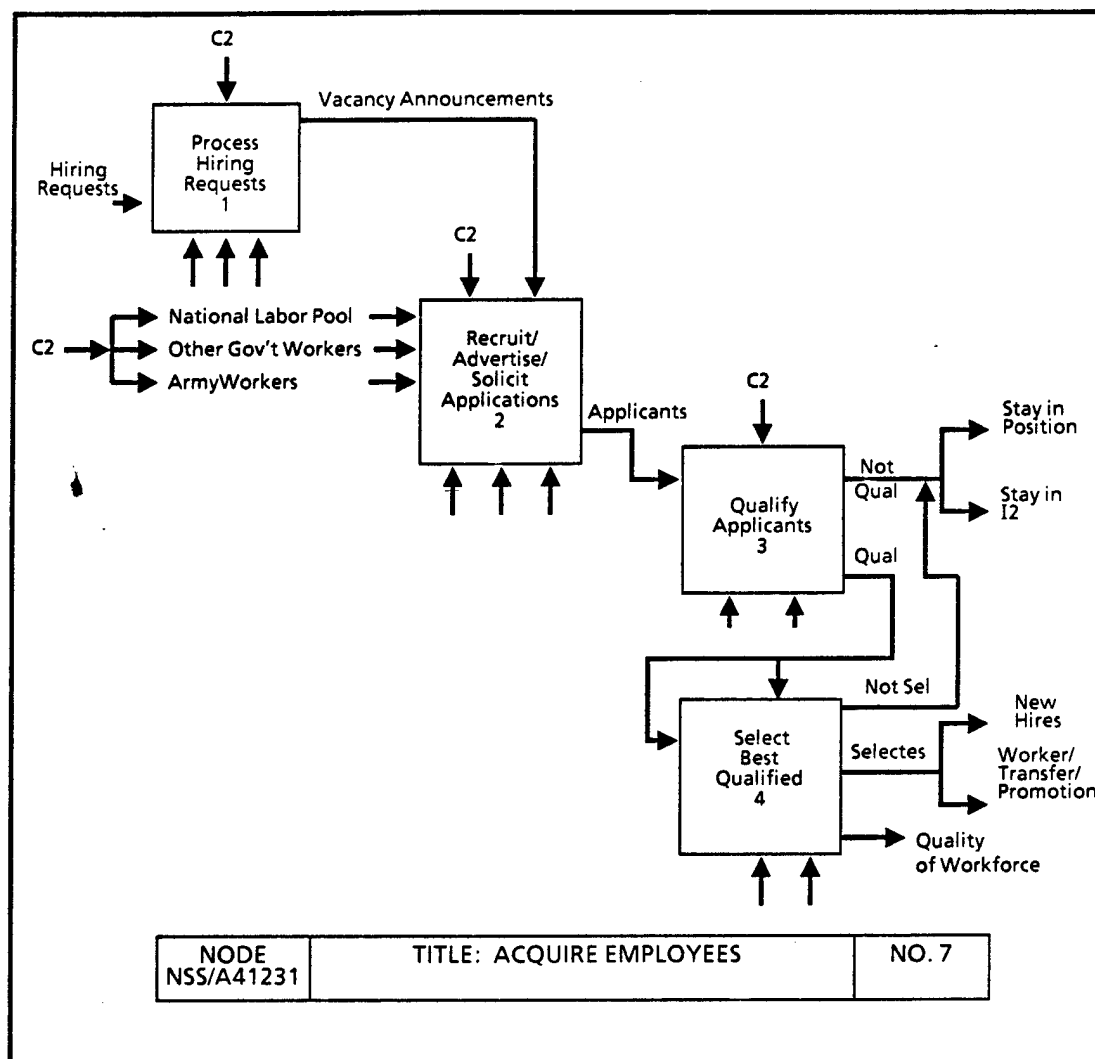
342-0000

NSS/A41231 ACQUIRE EMPLOYEES (No. 7)

This node contains four functions: (1) process hiring requests, (2) obtain applicants, (3) qualify applicants, and (4) select the best qualified applicants. This function involves workers already in the Army or other Federal agencies, as well as those outside the workforce.

NSS/A412311 PROCESS HIRING REQUESTS. Although exact processes vary somewhat across the Army, some one in the maintain workforce node usually triggers the civilian personnel acquisition process by some kind of hiring request indicating a need for a person with certain qualifications and experience to perform a specific function in a specific position. This node processes that request and prepares and distributes a vacancy announcement. Distribution may be narrowly limited to an immediate office or may be very broad -- even worldwide in scope.

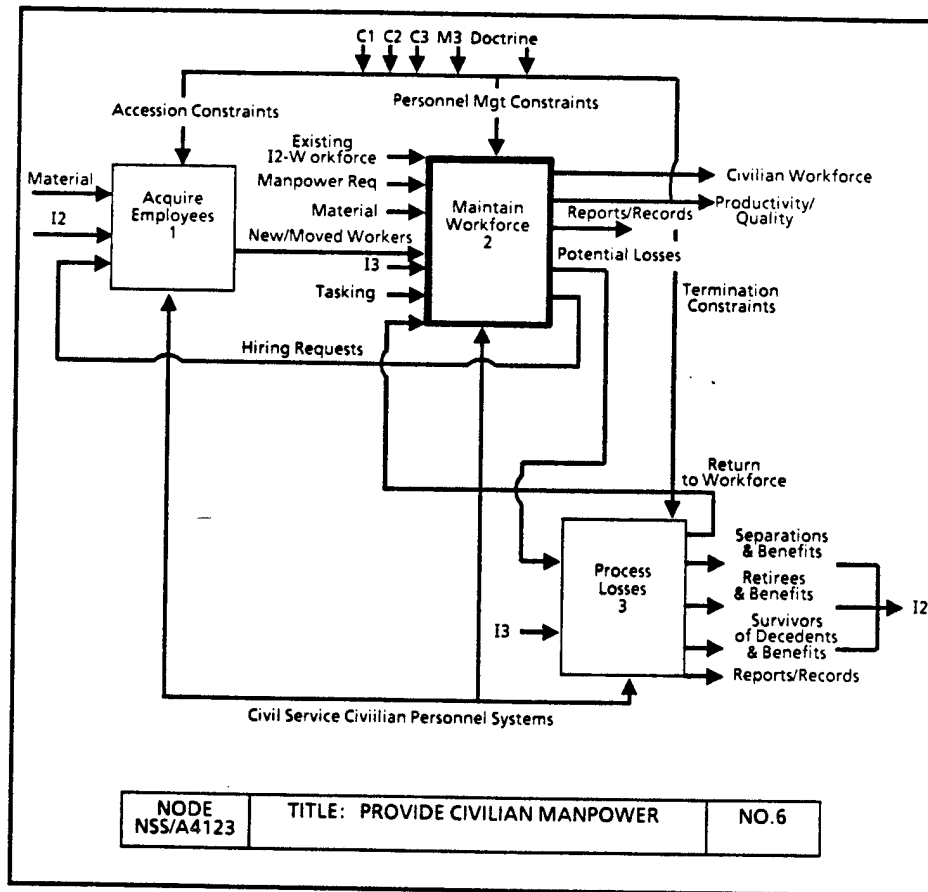
NSS/A412312 RECRUIT/ADVERTISE/SOLICIT APPLICATIONS. This function does what is necessary to obtain applications to fill the vacancies. It may be as simple as accepting applications turned in by local workers to operating a nationwide recruiting effort at universities and colleges as part of a government wide recruiting effort. The output is applicants for specific positions on a position-by-position basis. Vacancies are a constraint on this process, because -- no matter how well qualified applicants may be or how severely they are needed -- this process may generate applications only for vacant positions that have been announced.



342-0005

NSS/A421233 QUALIFY APPLICANTS. This function evaluates all of the applications for a vacancy and determines which meet the qualification standards for the position that is vacant. This qualification process may be very structured including performance tests or very general considering only the background and experience of the applicant. Sometimes it is performed in the U.S. Office of Personnel Management, but more often it is performed in the local personnel office. If the applicant is determined not to be qualified for this position, he or she remains in his or her current position if already in the workforce or remains outside the workforce if not already a member.

NSS/A421234 SELECT BEST QUALIFIED. This process selects the worker who is best qualified for this specific position from among the qualified applicants. The immediate supervisor of the vacant position usually makes the selection decision. The local personnel office then processes the necessary paperwork and notifies the individual selected when and where to report for further processing and to start work. Those not selected follow the same processes as those deemed to be not qualified.

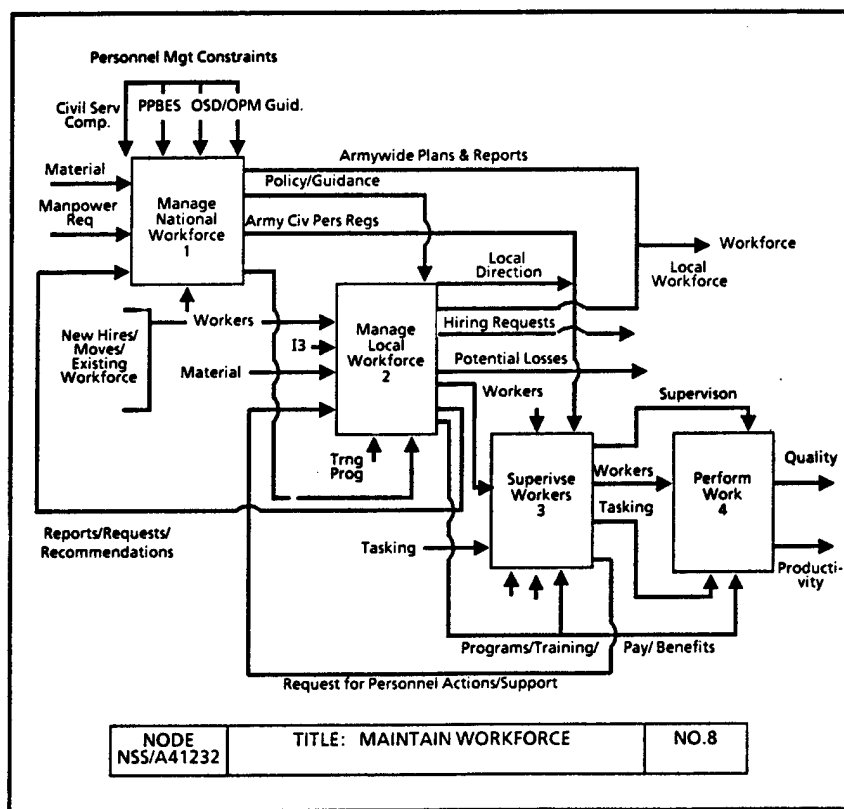


342-0009

NSS/A41232 MAINTAIN WORKFORCE (No. 8)

Maintain the workforce contains two management functions, a supervision function, and a performance function. Every level in the Army is involved in one way or another in accomplishing at least one of these functions. This is one of the most important nodes for this research effort. This node contains all of the actions needed to maintain an effective workforce from establishing policies and guidance at the highest level to actually performing work in the lowest job in the workforce. The outputs are the workforce itself, its quality and productivity, and its potential personnel losses.

NSS/A412321 MANAGE THE NATIONAL WORKFORCE. The function, manage the national force, develops and publishes Army Wide plans, reports, policies, guidance, and regulations that control the other elements in the maintain workforce node. It receives information -- reports, requests, and recommendations -- from the local workforce managers as a major input. It operates under control of laws and regulations and guidance from OSD, OMB, OPM, the Merit Systems Protection Board and other organizations outside the Army. Controls from within the Army include the PPBES and other guidance within the Department of the Army Headquarters. Note that individual personnel do not flow through this node in the civilian manpower system, as they do in the national level of the military system. In the civilian system nearly all personnel actions occur at local level management.

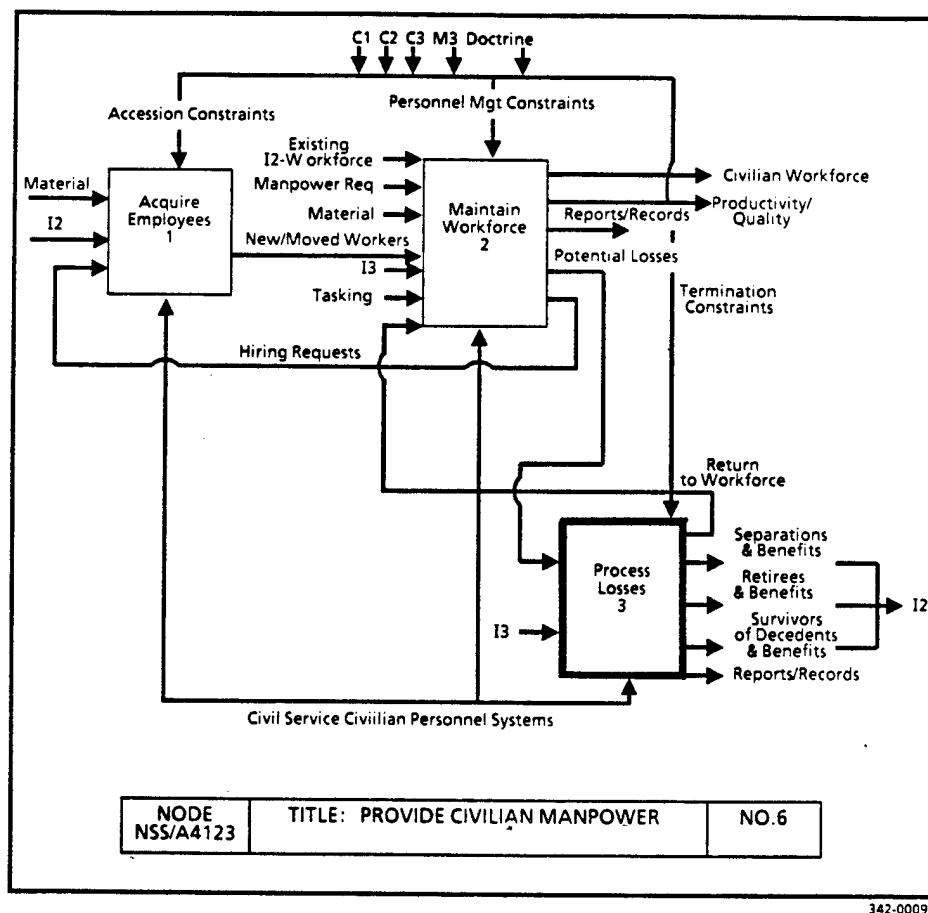


342-0010

NSS/A412322 MANAGE LOCAL WORKFORCE. This node is the heart of the civilian personnel management system -- most civilian personnel management actions take place in this node. It performs two general functions -- manpower and personnel. The manpower functions manage positions and the personnel functions manage people. (Note manage here is differentiated from supervise consistent with the OMB and OPM definitions. Manage deals with hiring, keeping records, paying, and other management functions, but does not include telling people how to do their job and when to do it. The latter is supervision.) The outputs of this process include individual workers, potential losses, local workforce information, and various programs to help the supervisors and workers (including pay, benefits, other incentives, and training). This node is further decomposed in figure no. 10.

NSS/A412323 SUPERVISE WORKERS. The supervisory function directs and controls the efforts of the workers to accomplish their tasking in support of Army missions. Note that the local workforce management does not provide that tasking -- it comes from operational commanders and those who support operational commanders through line management, not personnel management, channels to the supervisors. One finds military-civilian relationships very important here. Military personnel supervise civilians, civilians supervise military personnel, and both supervise contractors. Contractors may provide expertise and experience essential to work supervision.

NSS/A412324 PERFORM WORK. This node is the bottom line of the system. Workers perform work under the direction of their supervisors using the tasking, programs, training, incentives, and other methods, procedures, and tools available to them. The output is work measured both in quality and productivity. Sometimes this work is performed in a solely civilian context, but more often it uses an integrated workforce of military, civilian, and contract personnel under mixed supervision.



342-0009

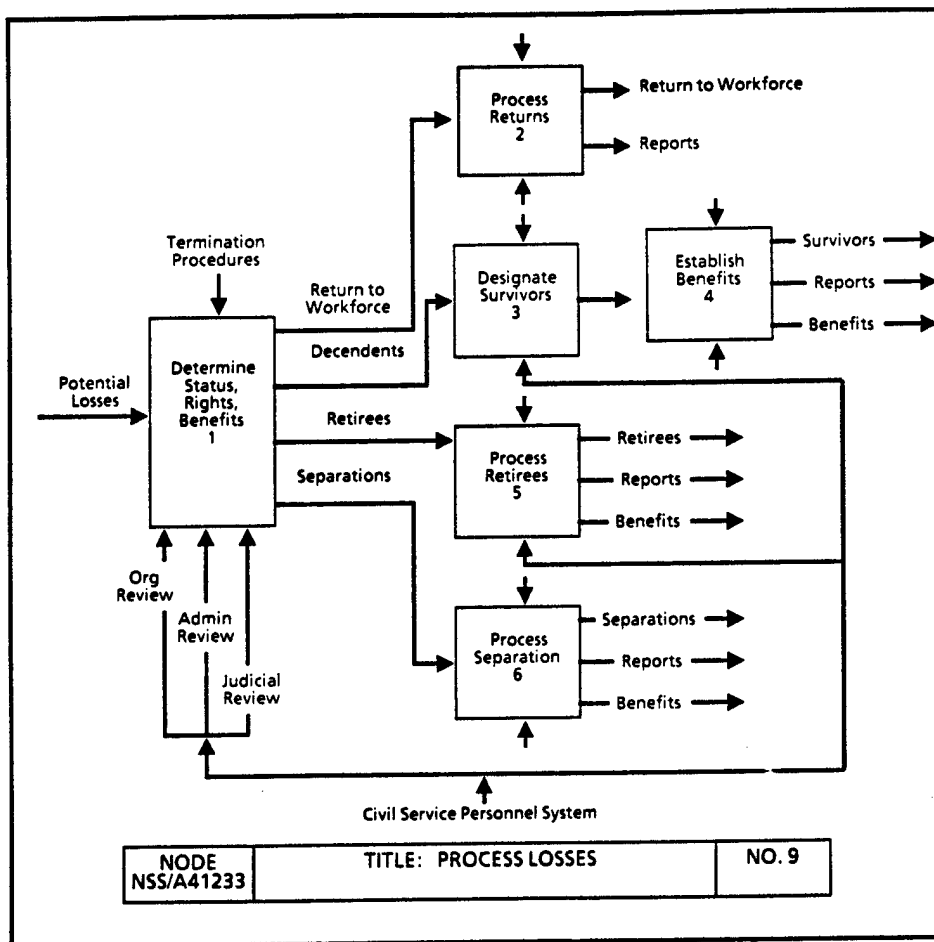
NSS/A41233 PROCESS LOSSES (No. 9)

This function processes those who have been determined by the local workforce managers to be potential losses, provides them due process, and separates them from the Army civilian workforce or returns them to duty, as the case may be. The outputs include people returned to the workforce and survivors, retirees (voluntary, mandatory, and disability), separations, and appropriate information on all of these actions. Almost all of those who leave the workforce have some benefits coming. The Army generally pays immediate benefits, but long term benefits are managed, funded and paid by the U.S. Office of Personnel Management (OPM).

NSS/A4123331 DETERMINE STATUS, RIGHTS, BENEFITS.

This node processes potential losses to determine their status, rights, benefits, and alternatives. It determines what will happen to these people using reviews within the local organization, the Army, and higher levels in the Department of Defense. Administrative review includes all of the processes provided by the civil service personnel system including reviews by OPM and the Merit Systems Protection Board. Judicial review includes actions by the Federal courts. In some cases, workers will return to the workforce. Review will reverse adverse actions, determine that the individuals were not eligible for retirement or other programs, or result in some who requested voluntary separations changing their mind and deciding to remain in the workforce.

NSS/A412332 PROCESS RETURNS. This node processes those returning to the workforce and providing whatever benefits to which they are entitled.



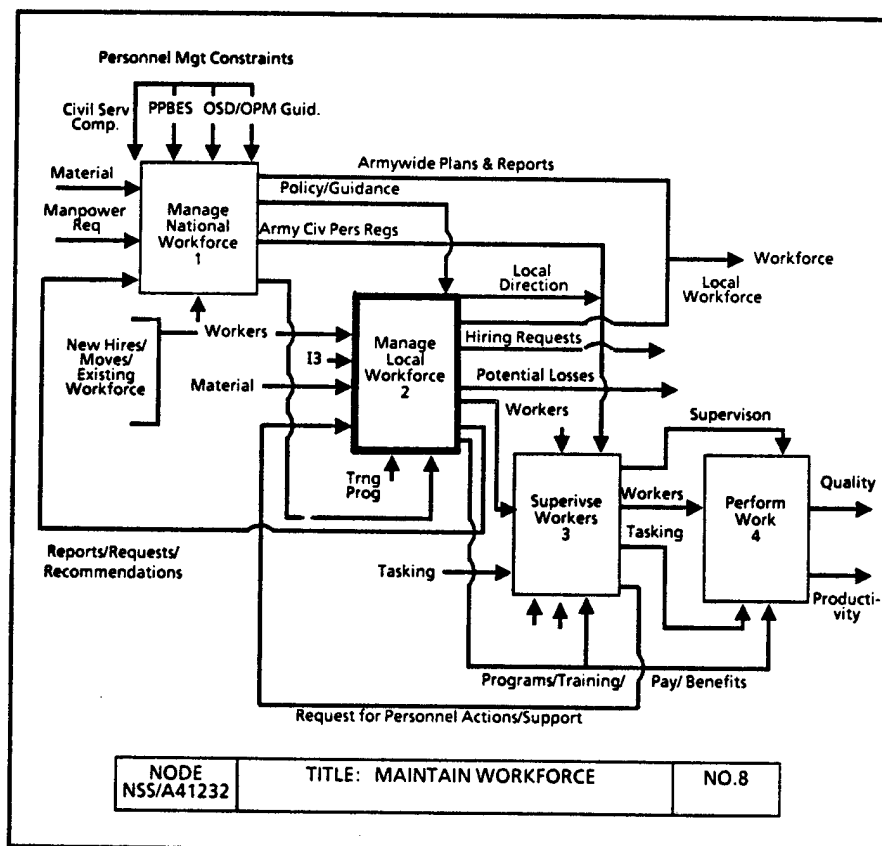
342-0006

NSS/A41233 DESIGNATE SURVIVORS. When workers die while in the workforce, the Army usually determines appropriate survivors and makes an original estimate of potential benefits. Survivors may be within or outside the workforce on their own right, but as survivors they may be entitled to certain benefits. OPM reviews these decisions and makes final determinations. For those who die after they are retired, OPM determines eligible survivors. OPM's decisions are subject to judicial review, but are generally outside the Army civilian personnel system by that time.

NSS/A412334 ESTABLISH BENEFITS. Within the Army personnel system, this node establishes the initial level of benefit to recommend to OPM for survivors of those who die while in the workforce.

NSS/A41235 PROCESS RETIREES. The Army processes those requesting retirement, those with disabilities, and those reaching mandatory retirement to verify initial eligibility and recommended level of benefits. OPM reviews all retirement cases and makes final determination and manages the Federal retirement system.

NSS/A412336 PROCESS SEPARATIONS. Both those who are being separated voluntarily and involuntarily are processed after their status, rights, and benefits have been determined by the appropriate reviews. The Army usually processes separation without direct contact with OPM or other organizations. The Army usually pays separation benefits in lump sum and the exworker departs the workforce.



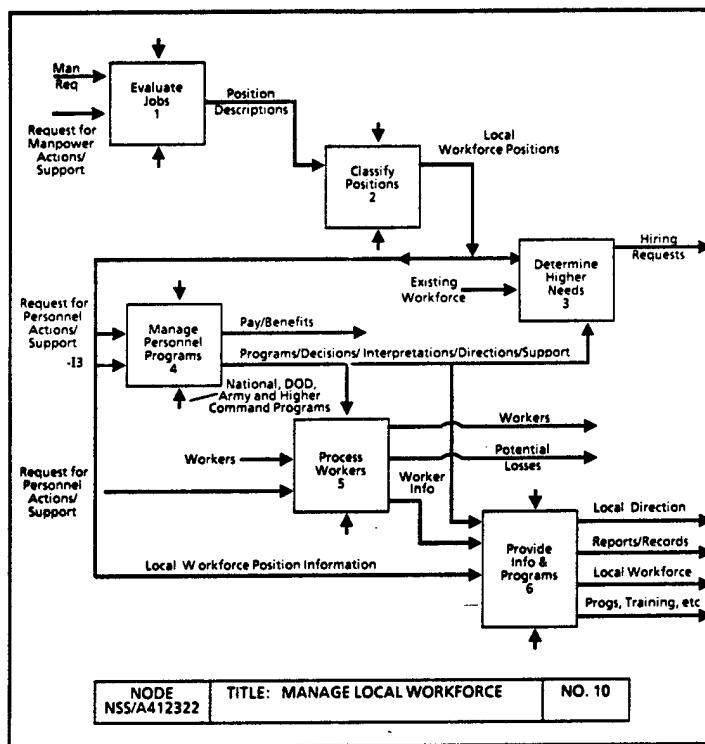
NSS/A412322 MANAGE LOCAL WORKFORCE (No. 10)

This node is divided into six functions. The first three are manpower functions dealing with positions. Number 4 and 5 are personnel functions dealing with people and programs that affect people. The last is an information function that provides information and programs for both manpower and personnel. The local civilian personnel office, local finance office, and local command headquarters usually perform these functions in support of supervisors and workers.

NSS/A4123221 EVALUATE JOBS. This node takes general requirements statements and requests for manpower actions and support, evaluates the work that must be done and prepares position (or job) descriptions explaining exactly what the worker must do in each specific position. This function is performed by the local civilian personnel office working in conjunction with the line organization that needs the position.

NSS/A4123222 CLASSIFY POSITIONS. This function applies OPM standards to determine the occupational series and grade level of the position. The output of this process is the local workforce position structure. The local civilian personnel office must classify a position before a worker can be hired or assigned to that position. The outputs are local workforce positions and manpower information about the local workforce that feed nodes 3 and 6.

NSS/A4123223 DETERMINE HIRING NEEDS. This node compares the personnel in the actual workforce with the positions approved for the workforce. It also considers available funding and ceiling points if they are being used as a constraint and determines hiring requirements. The outputs of this function are hiring requests for specific positions within the workforce manpower structure. Those hiring requests drive node NSS/A41231 as shown on figures nos. 6 and 7.



342-0007

NSS/A4123224 MANAGE PERSONNEL PROGRAMS. This node involves, not only the civilian personnel office, but the local commanders, local training organizations, the local finance office, and many other organizations that manage (at the local level) the vast array of personnel programs that pertain to the Army's civilian workforce. This function responds to a large percentage of the requests for personnel actions and support that come from supervisors and workers. The outputs include training programs, pay and benefits, educational opportunities, drive safe programs, savings bond drives, United Givers Fund, industrial safety programs, and thousands of others. The management of these programs also produces a continuous flow of decisions, interpretations, directions, and support for supervisors, commanders, and workers. The effectiveness of these programs contribute substantially to overall workforce productivity and quality at the local level.

NSS/A4123225 PROCESS WORKERS. Again, the civilian personnel office has a major role in this function, but is not the only player. The finance office, local line commanders, and many other military and civilian managers participate in this process. Determination of satisfactory performance and rewards and punishments for various levels of performance occur in this function. This includes the designation and initial processing of potential losses. This function also generates most of the personnel information that relates to the specific worker. The most important output is workers who report to supervisors to perform the work required of their positions in support of the Army's missions.

NSS/A4123226 PROVIDE INFORMATION AND PROGRAMS. One of the most important functions of local workforce management is providing information and programs to all other parts of the system. This includes dissemination of information to local supervisors and workers, maintenance of personnel and program records, submission of reports to local commanders and higher levels in the manpower organization, and the execution of all of the programs, training, etc. required by the local workforce, including the structure of the workforce itself and the working conditions under which supervisors and workers must function to perform the civilian workforce's share of the Army's overall labor requirements.

APPENDIX B

TASK 3 SUPPORTING DOCUMENTATION AND DISCUSSION

The analysis conducted in Task 3 provided a broad look at the research areas prioritized by ORAU, and it aggregated knowledge from previous studies, the expertise of the staff, and the information provided by ARI and DCP. This appendix describes the analytical method and details the procedure by which the cost/benefit analysis was conducted.

Resource Allocation Method for Cost/Benefit Analysis

The Resource Allocation Method (RAM) uses the concept of a benefit/cost ratio in aggregating the judgments of costs and benefits. The goal of the RAM is to determine the appropriate level at which to satisfy each system requirement. The sheer number of potential system designs, which may number in the hundreds of millions, makes it impossible for the unaided designer to select the design that offers the greatest benefit (in terms of satisfaction of the requirements) for the use of the limited resources. The RAM analysis organizes, displays, and updates the decision maker's judgments about the relative costs and benefits for each level of satisfaction of each requirement. It identifies the key contributions of options that provide maximum benefit for the amount of resources. Sensitivity analyses show the design makers how the overall results would change as a result of modifying the benefits and costs assigned to the levels of specific options. The RAM process was conducted according to the following subtasks.

Subtask 3.1 Develop Model Structure

In this step, the requirements that must be satisfied by the system were identified, along with the levels at which they might be satisfied. The levels were ordered so that each level was both more costly and more beneficial than the previous level. The requirements were the sixteen research areas from the ORAU prioritization reports that were based on the eight Roadmap research areas. An example of the resulting model structure is shown in Table B-1. Each research area represents a variable of the model, and is shown as a row on the table. The alternative research topics within each project (the columns) represent the levels of effort at which the issues for that research area may be addressed.

The levels of effort are listed cumulatively; that is, the measures in one column are developed in addition to those in all previous columns. Levels of research effort represent the degree to which the issues for that particular research area are addressed. In other words, they represent a portion of the total amount of possible research activity for that area. At each succeeding level, the portion of the total amount of research activity devoted to the area increases. The levels of effort always begin with no coverage of the research area, or no research activity, and increase from there. The final level of effort represents the total amount of activity

Table B-1. Example Cost/Benefit Model Structure

RESEARCH AREAS	LEVEL							
	1	2	3	4	5	6	7	8
ATTRACT HI QUAL CANDIDATES	none	assess issues	assess attractiveness	assess marketing	develop attractiveness	develop marketing	evaluate attractiveness strategies	evaluate marketing strategies
SELECT CANDIDATES	none	take baseline measures	assess issues	develop programs/ strategies	test programs/ strategies			
ASSURE CANDIDATES HIRED	none	take baseline measures	assess issues	develop programs/ strategies	test programs/ strategies			
RETAIN PRODUCTIVE EMPLOYEES	none	take baseline measures	assess issues	develop programs/ strategies	test programs/ strategies			
SEPARATE POOR EMPLOYEES	none	take baseline measures	assess issues	develop programs/ strategies	test programs/ strategies			
MISSION CHANGE IMPACTS	none	take baseline measures	assess issues	develop programs/ strategies	test programs/ strategies			
PERFORMANCE ASSESSMENT	none	take baseline measures	assess issues	develop programs/ strategies	test programs/ strategies			
INDIVIDUAL PRODUCTIVITY	none	take baseline measures	assess issues	develop programs/ strategies	test programs/ strategies			
IDENTIFY SUPERVISORS/MANAGERS	none	take baseline measures	assess issues	develop programs/ strategies	test programs/ strategies			
DEVELOP LEADERSHIP SKILLS	none	take baseline measures	assess issues	develop programs/ strategies	test programs/ strategies			
ASSESS MANAGER PERFORMANCE	none	take baseline measures	assess issues	develop programs/ strategies	test programs/ strategies			
CPO EFFECTIVENESS	none	take baseline measures	assess issues	develop programs/ strategies	test programs/ strategies			
BUILD MIL-CIV RELATIONS	none	take baseline measures	assess issues	develop programs/ strategies	test programs/ strategies			
IMPROVE ORG. EFFECTIVENESS	none	take baseline measures	assess issues	develop programs/ strategies	test programs/ strategies			
CIVILIAN FUNCTIONS	none	take baseline measures	assess issues	develop programs/ strategies	test programs/ strategies			
FORECAST WORKFORCE NEEDS	none	take baseline measures	assess issues	develop programs/ strategies	test programs/ strategies			

required to fully investigate that area. The plan that is recommended by this analysis must specify the level at which each research area is addressed.

For example, the first research area listed in the example model structure is recruitment (Table B-1). Varying amounts of effort can be devoted to conducting research on recruitment. These different amounts of effort are indicated in the columns adjacent to the row designated "recruitment." At level one, the absolute lowest level of resources or research effort, no investigation of recruitment is conducted. At level two, efforts are taken to describe the issues relevant to the research on recruitment. At level three, which includes the efforts of all preceding levels (as stated earlier the levels are cumulative) recruitment issues are assessed and measures of job attractiveness are taken. The fourth level of research effort includes assessment of recruitment issues and measures of both job attractiveness and current job marketing strategies. Successive levels (levels five through eight) include all these efforts but add, respectively, resources to develop job attractiveness and new marketing strategies, and to assess the effectiveness of programs designed to develop job attractiveness and to assess the effectiveness of the new marketing strategies. The eighth level of research effort would include and exceed the efforts of all previous levels, and would represent the most complete investigation of this recruitment.

The purpose of our cost/benefit analysis was to provide a preliminary screening of the research areas to identify a subset on which it would be most cost-efficient for the Army to conduct research. For example, we wanted to determine the value of conducting research in the broad area of supervisory selection relative to that of conducting research in the broad area of organizational effectiveness. Therefore we did not include in this analysis, levels which would partially address a research area. Because we were looking at the value of conducting research in an area in general, we considered only two levels of effort: no research effort versus total coverage. An example of the model structure we worked with for this analysis appears in Table B-2.

Subtask 3.2 Assess Costs and Benefits

The second step in model development was the assessment of model parameters. Each level was assigned a cost and benefit. The costs represent the resources that are required to address the issues of the research area at a certain level of coverage. The cost information for the present analysis was obtained from the ORAU prioritization work. We used ORAU estimates of costs defined as the number of professional months needed to accomplish specific research tasks within each of the sixteen research areas. Benefit estimates represent the percentage of the total amount of benefit associated with that research area that a particular level of effort would bring. Benefits were assigned for each of our two levels of effort according to the amount of relative benefit that would be expected to accrue for the particular level. Thus, when no research is conducted on a project 0% benefit would accrue; if the project were fully investigated, 100%

Table B-2. The Model Structure Used for This Analysis

VARIABLE		1	2
1	Attract Hi Qual Cand	None	Attract Hi Qual Cand
2	Select Candidates	None	Select Candidates
3	Assure Cands. Hir	None	Assure Cands. Hir
4	Retain Prod. Emps	None	Retain Prod. Emps
5	Separate Poor Emps	None	Separate Poor Emps
6	Mission Change Imp	None	Mission Change Imp
7	Performance Assessment	None	Performance Assessment
8	Individ Productivty	None	Individ Productivty
9	ID Supervisor	None	ID Supervisor
10	Devel Leader Skil	None	Devel Leader Skil
11	Assess Mgr Performance	None	Assess Mgr Performance
12	CPO Effectiveness	None	CPO Effectiveness
13	Build Mil-Civ Reltns	None	Build Mil-Civ Reltns
14	Improve Org Effect	None	Improve Org Effect
15	Civilian Functions	None	Civilian Functions
16	Forecast Work Needs	None	Forecast Work Needs

benefit would accrue. An illustration of the assessed costs and benefits for three variables of the example model is shown in Table B-3.

In Table B-3, the figures under the cost columns stand for estimates of the number of professional months that would need to be devoted to accomplish the tasks at each level of research effort (remember that the tasks of any one level include those of all preceding levels). Other cost figures that might have been used are material costs, computer time costs, and other costs of conducting research. This example illustrates how the number of professional months (or the costs) of the research increases with each level of effort. The figures under the benefit columns represent the relative benefits of conducting research at each level of effort. Notice how the estimated benefits of the research also increase with each level of research effort.

Table B-3. Assessed Costs and Benefits of Research Projects

VARIABLE 1: Select Candidates

	Cost	Benft
1 None	0	0
2 Select Candidates	218	100
CRITERION WTS		10

VARIABLE 9: ID Supervisors/Mgrs

1 None	0	0
2 ID Supervisors/Mgrs	236	100
CRITERION WTS		14

VARIABLE 10: Devel Leader Skills

1 None	0	0
2 Devel Leader Skills	262	100
CRITERION WTS		13

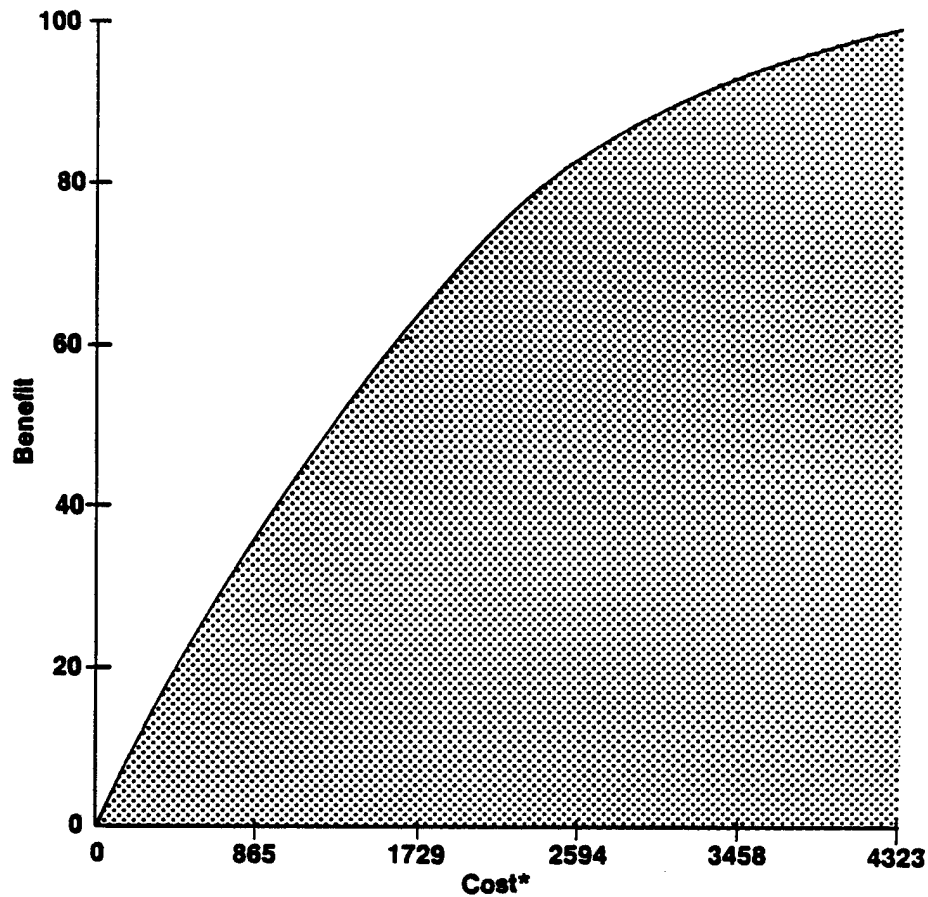
Subtask 3.3 Assess Importance Weights

In this step, each requirement is assigned a weight that indicates the importance of the range of benefits offered by alternative levels. The ORAU prioritization effort surveyed key Army personnel regarding their opinions about the importance of sixteen civilian personnel functions. We used these importance scores as weights for the research areas. The weights figure into the equations of the RAM analysis which calculate benefit/cost ratios.

Subtask 3.4 Identify Cost-Efficient Options

The change in levels that increase satisfaction of the requirements are ordered according to their benefit/cost ratio. The previous steps provide values for all of the parameters of the resource-allocation model. In this step the required calculations to identify cost-efficient options are performed. The result of the analysis is an ordering of the research areas by their benefit/cost ratio. This ordering can be expressed in a list, as it is shown in Table B-4, or in a graph, as it is shown in Figure B-1.

Our analysis identified as most cost-efficient research on attracting high quality candidates to Army jobs, identifying good candidates for supervisory and managerial positions and developing supervisory, managerial,



*Cost measured in number of professional person months.

Figure B-1: Cost and Benefit of Optimal Combination of Research Projects

and leadership skills (Table B-4). Conversely, the least cost-efficient area was determined to be developing and evaluating strategies to improve overall organizational effectiveness. It is possible to determine the optimal collection of research areas at any level of cost by including all areas listed in Table B-4 until the cumulative cost equals the total budget.

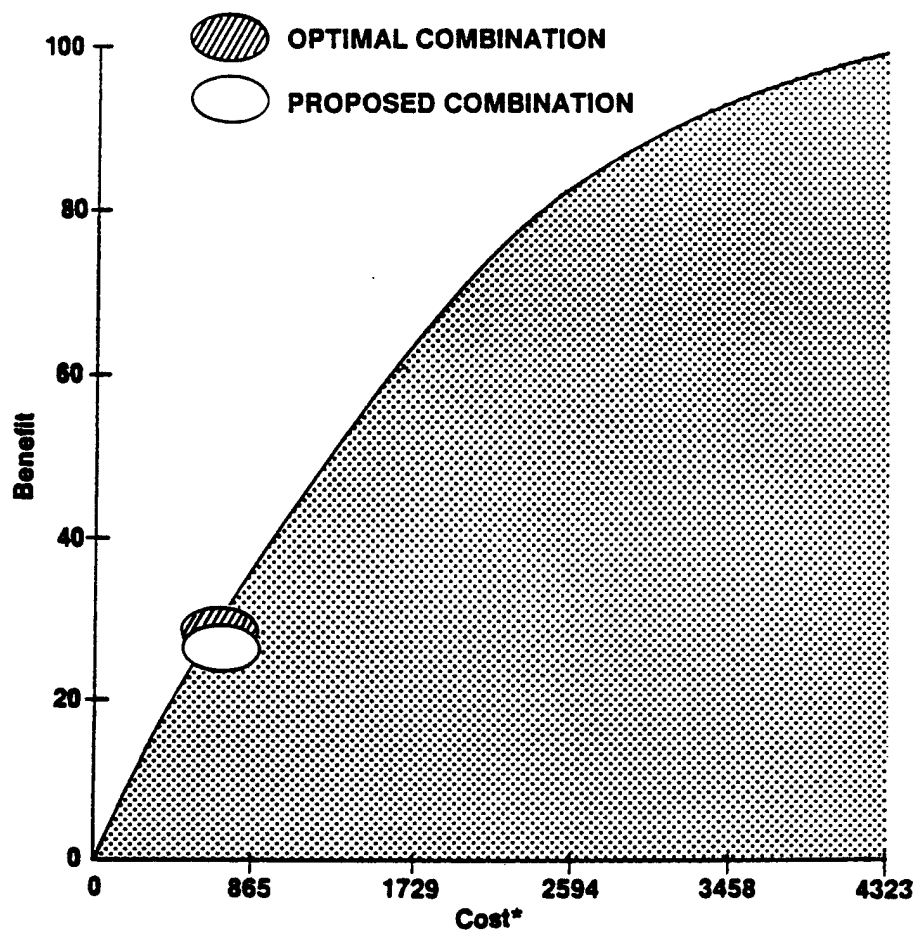
In Figure B-1, each box along the curved line represents the research areas that would produce the highest benefit at each increment in cost. For example, draw an imaginary vertical line perpendicular to the 865 month marker on the horizontal graph. The point at which this line intersects with the curved line represents the project that can be conducted with 865 professional person months. A horizontal line drawn from this point to the

vertical axis intersects at a position on this axis which represents the amount of benefit that would be obtained from this particular area.

Table B-4. Order of Best Research Project Packages

#	VARIABLE	ORDER OF LEVEL	BEST PACKAGES	COST	CUM COST	CUM % BENEFIT
1	1 Attract Hi Qual Cand	2	Attract Hi Qual Cand	232	232	110
2	9 ID Supervisors/Mgrs	2	ID Supervisors/Mgrs	236	468	213
2	10 Devel Leader Skills	2	Devel Leader Skills	262	730	309
4	7 Performance Assessmt	2	Performance Assessmt	127	857	353
5	2 Select Candidates	2	Select Candidates	218	1,075	426
6	4 Retain Prod. Emps.	2	Retain Prod Emps.	372	1,447	544
7	8 Individ. Productvty	2	Indiv. Productvty	291	1,738	632
8	11 Assess Mgr Performnc	2	Assess Mgr Performnc	253	1,991	699
9	5 Separate Poor Emps.	2	Separate Poor Emps.	342	2,333	779
10	13 Build Mil-Civ Reltns	2	Build Mil-Civ Reltns	240	2,573	831
11	12 CPO Effectiveness	2	CPO Effectiveness	462	3,035	890
12	3 Assure Cands. Hired	2	Assure Cands. Hired	175	3,210	912
13	6 Mission Change Impct	2	Mission Change IMPct	295	3,505	949
14	15 Civilian Functions	2	Civilian Functions	255	3,760	978
15	16 Forecase Work Needs	2	Forecast Work Needs	336	4,096	993
16	14 Improve Org Effectv	2	Improve Org Effectv	227	4,323	1,000

Figure B-2 shows how close to optimal is our choice of research projects. The shaded circle represents, in terms of benefit/cost ratio, the optimal combination of research projects. This circle is positioned at almost the same point as the white circle which presents, in terms of benefit/cost ratio, our combination of research projects.



*Cost measured in number of professional person months.

Figure B-2: Comparison of Optimal Combination of Research Projects to That Proposed for this Contract

APPENDIX C

INTERVIEW QUESTIONS FOR CANDIDATE SELECTION

PART ONE: SPECIFIC RESEARCH ISSUES

SPECIFYING RESEARCH PROJECTS

1. Is your organization effectively recruiting and selecting the most qualified candidates for Army jobs?
2. Does the quality of the candidates vary by
 - A. Location, e.g., overseas vs continental?
 - B. Type of Army facility?
 - C. Extent of demand by industry or other agencies?
 - D. Level of job being filled?
 - E. Other?
3. What barriers get in the way of selecting the most qualified candidates, e.g.,
 - A. Inappropriate selection criteria?
 - B. Timeliness of offers to candidates?
 - C. Other?
4. What candidate characteristics are associated with high performance on the job, e.g., education, experience, personal characteristics, etc.?

Do these characteristics differ for candidates for overseas positions?
5. What factors influence candidates' acceptance of job offers for Army jobs? (Mobility requirements, compensation, work environment, civil servant image, for example)

Do these factors differ for minorities and women?
6. What is the impact of word of mouth recruiting for Army jobs?

CURRENT AVAILABILITY OF INFORMATION

7. What information exists that allows you to
 - A. Assess the quality of recruits
 - B. Determine if appropriate selection criteria are being used?
 - C. Identify high performers
 - D. Determine if recruitment is more successful for some occupations than others?
 - E. Measure time lags for filling specific positions?

8. Do you have access to this information?

ADDITIONAL INFORMATION REQUIREMENTS

9. What specific information would be required to

- A. Assess the quality of recruits
- B. Determine if appropriate selection criteria are being used?
- C. Identify high performers?
- D. Determine differential success in recruitment for various positions?
- E. Measure time lags for filling positions?

10. What would you estimate the cost would be for obtaining this information?

COSTS/BENEFITS OF SPECIFIC RESEARCH PROJECTS

11. What is the impact on productivity of

- A. More effectively assessing the quality of recruits?
- B. Using more appropriate selection criteria?
- C. Identifying high performers?
- D. Successfully recruiting for hard to fill positions?
- E. Reducing time lags for filling positions?

12. What specific benefits would be expected from each (A through E, above)?

SUPPORT

13. Which of the problems listed in Question 11 do you consider to be the most critical? In which would you support specific research projects? Would you support implementation of the results?

PART TWO: OTHER RECRUITMENT/SELECTION ISSUES

1. Does your organization have additional recruitment and selection problems? What are they?

2. For each of these problems, indicate

- A. How you know the problem exists; what information is available that identifies the problem.
- B. What additional information you need to solve the problem.
- C. How the problem impacts productivity.
- D. What specific benefits would result from solving this problem.
- E. Whether you would support a research project to solve the problem and implement the solution.

PART THREE: OTHER HUMAN RESOURCES ISSUES

1. Does your organization have additional human resources problems?
What are they?
2. For each of these problems, indicate
 - A. How you know the problem exists; what information is available that identifies the problem.
 - B. What additional information you need to solve the problem.
 - C. How the problem impacts productivity.
 - D. What specific benefits would result from solving this problem.
 - E. Whether you would support a research project to solve the problem and implement the solution.

LEADERSHIP AND MANAGEMENT TECHNICAL AREA

Working Paper

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MANAGEMENT TRAINING EVALUATION: INTERIM REPORT

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8779

MANAGEMENT TRAINING EVALUATION:

INTERIM REPORT

INTRODUCTION

Background

Over the past several years, the Army has shown increased interest in the civilian component of its workforce. Nearly 40% of the Army's personnel are civilians employed in support roles throughout the world. The more than 400,000 members of this civilian personnel workforce are an essential element of the Army team and contribute significantly to the accomplishment of the Army mission. Army civilians serve in nearly every occupation within the Federal Civil Service personnel system and constitute the largest single agency workforce in this system, employing 15% of all white-collar and 22% of all blue collar employees. Within Army, about 23% of the civilians are in blue-collar occupations and 77% are in white-collar occupations.

The Army civilian personnel workforce includes over 90,000 civilians in 23 Army Civilian Career Programs. These programs were developed to provide more systematic planning for and development of employees in the professional, technical, and administrative career fields. Thus these programs were designed to ensure a steady flow of high-quality and fully trained personnel for positions at designated levels and to recruit employees interested in long-term career opportunities.

The management of a workforce as complex, heterogeneous, and dispersed as that of Army civilian personnel requires more than an ordinary personnel management system. The Army civilian personnel management program is based on the principle that personnel management is a function of line supervision and that authority fully adequate to perform this function should be delegated at the lowest operating level which is consistent with efficient administration and effective control. Hence the Army's civilian personnel function is highly decentralized and is operated through over 170 Civilian Personnel Offices (CPOs) located at Army installations throughout the world.

Although civilian personnel management issues are not new to the Army, they have until recently received relatively little attention; and there has been no systematic research program to provide the necessary knowledge base for improving the management of Army civilians. Several events have occurred to heighten interest in the Army's civilian workforce. First, population projections indicate that the pool of eligible military candidates is declining while the Army's workload is increasing. This development requires a more optimal mix of personnel resources with a possible concentration of the military in

combat-related tasks, while Army civilians (supplemented by outside contractors) assume an increasing role in support tasks.

A second reason for the increased interest in Army civilians was a recent Army Inspector General report (Department of the Army, Office of the Inspector General, undated) which emphasized the need to improve all aspects of civilian personnel management and which placed the responsibility for improvement on military commanders. A Civilian Personnel Modernization Task Force, consisting of 15 senior-level military and civilian members, was convened in early 1986. This task force has already begun to recommend and implement changes in various areas of civilian personnel management.

As a result of the increased interest in Army civilian personnel, efforts have been made to establish an Army civilian personnel management research program. A Memorandum of Agreement (MOA) has been signed by the U.S. Army Research Institute (ARI) and the Director of Civilian Personnel to develop such a program. In addition, the Civilian Personnel Directorate (CPD) has developed the Army Strategic Plan for Civilian Personnel Management Research: A Roadmap for the Future. The Roadmap identifies civilian personnel research needs. Priorities for these research needs are now being determined in a follow-up effort.

Problem

One of the research needs identified in the Roadmap was that of the evaluation of management training. Given the demographic factors noted above and the current efforts to strengthen the efficient management of civilian personnel, the need to develop a cadre of capable civilian personnel managers is more crucial than ever before. As do other organizations in both the civilian and military communities, the Army makes sizeable expenditures for management training every year. And like those other organizations, the Army knows relatively little about the effectiveness of its management training. This problem--the lack of management training evaluation--was identified as one of the Army's civilian personnel research needs in the Roadmap mentioned above.

Purpose of Research

Accordingly, the purpose of this research is to determine what approaches are available to evaluate Army civilian management training. Specifically, the research will address the following questions:

- (1) What approaches have been used in the research literature to evaluate management training?
- (2) How do the Army and other agencies assess the effectiveness of management training?

As a result of this investigation, recommendations will be made concerning practical approaches for evaluating Army civilian management training.

METHOD

There will be two principal sources of data examined in the attempt to answer the research questions specified above. One of these sources will be the research literature on the evaluation of management training. The other source will be knowledgeable contacts in the Army and other Government agencies. The procedures for tapping these two sources are outlined below.

Research Literature

Definitions. One of the first steps in identifying the literature pertinent to a topical area is to define the area as specifically as possible. First, one needs to define the independent and dependent variables. In this instance, the independent variable is management training. Paraphrasing Goldstein's (1986) definition of training, one can define management training as the systematic acquisition of skills, rules, concepts, or attitudes that result in improved performance as a supervisor or manager. Training interventions may include courses, workshops or seminars, coaching/mentoring, simulations, or self-development activities. Training may be internal (conducted by trainers within the organization) or external (conducted by outside trainers) and take place on the premises of the organization itself or in another location such as a college or university.

In addition to defining the independent variable of interest, one must categorize the dependent or outcome variables. A frequently used taxonomy of training outcomes is one devised by Kirkpatrick. As described by Goldstein (1986), Kirkpatrick's four levels of criteria are: reaction, learning, behavior, and results. Reaction is what the trainees thought of the training program. Learning is the knowledge of principles, facts, techniques, and attitudes that were specified as training objectives. Behavior involves the measurement of job performance. The results category involves relating training results to organizational objectives, such as positive effects on turnover, costs, morale, and the like.

Selection Criteria. To be included in the literature review, a study must include some sort of systematic training effort designed for managers (first-level supervisors and above). Although most management training evaluation research has involved white collar subjects, blue collar supervisory training will not be excluded. All, or almost all, training evaluation has involved outcome measures falling into the Kirkpatrick

"reaction" category. Of particular interest in this literature review will be finding measures representing the two highest levels of Kirkpatrick's criteria--behavior and results. While learning measures are not as frequently encountered in the literature as reaction measures, learning measures are more easily devised and applied than are the documentation of behavioral change and organizational results.

Search. A computer search has been conducted on various computer databases. The DIALOG databases searched included PsychINFO (from 1967), SOCIOLOGICAL ABSTRACTS (from 1963), SOCIAL SCISEARCH (from 1972), and MANAGEMENT CONTENTS (from 1974). In addition, the DROLS (Defense RDT&E On-Line System) was also searched. The computer searches used the keywords management training or development crossed with evaluation or assessment. The searches encompassed the time from the beginning of the database to February 1987.

Abstracts of promising titles have been obtained and read. Articles and reports which appeared to meet selection criteria (discussed below) are being acquired. Reviews and summaries of training and training evaluation literature are being reviewed for potentially pertinent articles and reports. In addition, reference lists of articles and reports will be inspected to identify additional research. Documents examined will include only those written in English. No attempt will be made to secure foreign language articles.

To date, four Annual Review chapters on training have been reviewed. An effort is being made to obtain from Gary Latham a draft copy of the next Annual Review chapter on training. Goldstein's (1986) revised book on training, the earlier book by Campbell, Dunnette, Lawler, and Weick (1970) on managerial behavior and effectiveness, and Hogarth's book on evaluating management education, have also been reviewed. To date, 18 articles meeting the selection criteria have been identified. It is estimated that approximately half of the articles reviewed thus far have met the selection criteria. It is anticipated that an additional nine studies from Peterson (1979) can be included. Efforts are underway to obtain those studies in the Burke and Day (1987) meta-analysis which are not already included in the 18 studies mentioned above.

Coding. Studies meeting the selection criteria will be coded. A draft code sheet is contained in Appendix A. The content of the code sheet is based on a review of the literature noted in the above paragraph plus the compendium of measures by Cook, Hepworth, Wall, and Warr (1981) and the organizational measurement book by Price and Mueller (1986). It is anticipated that two coders will code independently, with differences resolved by discussion. If two coders are available, intercoder agreement will be assessed. Following Bullock and Svyantek (1985), who have held that percent of agreement is the best measure of intercoder reliability for nominal variables, percent

Analysis. Counts will be made of each variable and its subcategories. It is expected that the data will best be displayed in tabular form, perhaps clustered by training content.

Agency Contacts

Identification of contacts. Persons knowledgeable about training and efforts to evaluate training will be contacted. Such persons will be identified by sources in the Directorate of Civilian Personnel and the Civilian Personnel Center. For example, it is anticipated that knowledgeable persons will be contacted at Edgewood Arsenal and the Tobyhanna Army Depot. In addition to Army agencies, other Government agencies will be contacted. It is expected that the Federal Aviation Administration and the Internal Revenue Service will be contacted since both of these agencies have substantive management development programs.

Interviewing. It is planned to collect information on management training evaluation by means of unstructured interviews. Contacts will be asked to describe how their agency evaluates management training. Information on the type of training (content, training method, and mode of delivery) will also be gathered. To the extent possible, cost data will be collected in order that training cost estimates may be made.

Analysis. The interview data will be analyzed using a content analysis approach. However, the principal value of the interview data will be to compare and contrast the evaluation procedures with those identified in the literature search. If Army evaluation data are available, it may be instructive to calculate effect sizes for those data in order to relate them to the results of the Burke and Day (1986) meta-analysis.

Product

The purpose of this research is to determine what management training evaluation approaches might be practical for Army civilian personnel. The information collected by the above procedures (literature search and interviews with knowledgeable contacts) will be synthesized and a methodology developed for evaluating civilian management training. It is expected that several procedures will be identified or developed as it is unlikely that the same methods will be equally applicable in all situations. If feasible, the relative costs of the various procedures will be estimated.

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APPENDIX A

Code Sheet for Training Evaluation

SUBJECTS

Experimental Group

Type of group:

- ☐ Business/industry
- ☐ Nonprofit
- ☐ Government/nonmilitary
- ☐ Military
- ☐ Academic
- ☐ Other (specify): _____

Managerial level:

- ☐ Supervisory
- ☐ Middle manager
- ☐ Senior level manager
- ☐ Mixed levels
- ☐ not specified
- ☐ Other (specify): _____

N of subjects: _____ Males: _____ Females: _____

How selected:

- ☐ Random assignment
- ☐ All applicants for program
- ☐ Other (specify): _____

Comparison Group

- ☐ Yes
- ☐ No

Type of group:

- ☐ Business/industry
- ☐ Nonprofit
- ☐ Government/nonmilitary
- ☐ Military
- ☐ Academic
- ☐ Other (specify): _____

Managerial level:

- ☐ Supervisory
- ☐ Middle manager
- ☐ Senior level manager
- ☐ Mixed levels
- ☐ not specified
- ☐ Other (specify): _____

N of subjects: _____ Males: _____ Females: _____

How selected:

- ☐ Random assignment
- ☐ All applicants for program
- ☐ Other (specify): _____

TRAINING

No. hours _____

No. sessions _____

Duration _____

Mode of intervention:

___ Multi-course program

___ Course, internal

___ Course, external

___ Workshop, internal

___ Workshop, external

___ On-the-job

___ Self-development

Program content

___ General management

___ Human relations

___ Self-awareness

___ Problem solving/decision making

___ Rater training

___ Motivation/values

___ Other (specify): _____

Training method

___ Lecture

___ Lecture/discussion

___ Behavioral modeling

___ Simulation

___ Sensitivity training

___ Lecture/group discussion plus role playing or practice

___ Multiple techniques

___ Other (specify): _____

MODERATOR VARIABLES

___ Power

___ Self-esteem

___ Other (specify): _____

OUTCOME MEASURE No. 1

Label: _____
Name of instrument: _____
Type: _____
 _____ Interview
 _____ Survey
 _____ Test/inventory
 _____ Records
 _____ Observation
 _____ Other (specify): _____
Reliability: _____
Validity: _____

<u>Kirkpatrick category</u>	<u>Respondent Group(s)</u>
_____ Reaction	_____ Self
_____ Learning (subjective)	_____ Subordinates
_____ Learning (objective)	_____ Peers
_____ Behavior (subjective)	_____ Superiors
_____ Behavior (objective)	_____ Other (specify): _____
_____ Results (subjective)	
_____ Results (objective)	

OUTCOME MEASURE No. 2

Label: _____
Name of instrument: _____
Type: _____
 _____ Interview
 _____ Survey
 _____ Test/inventory
 _____ Records
 _____ Observation
 _____ Other (specify): _____
Reliability: _____
Validity: _____

<u>Kirkpatrick category</u>	<u>Respondent Group(s)</u>
_____ Reaction	_____ Self
_____ Learning (subjective)	_____ Subordinates
_____ Learning (objective)	_____ Peers
_____ Behavior (subjective)	_____ Superiors
_____ Behavior (objective)	_____ Other (specify): _____
_____ Results (subjective)	
_____ Results (objective)	

LEADERSHIP AND MANAGEMENT TECHNICAL AREA

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JOB REQUIREMENTS FOR CIVILIAN SUPERVISORS: RESEARCH PLAN

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JOB REQUIREMENTS FOR CIVILIAN SUPERVISORS: RESEARCH PLAN

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JOB REQUIREMENTS FOR CIVILIAN SUPERVISORS: RESEARCH PLAN

INTRODUCTION

The U.S. Army employs more than 400,000 civilians in nearly 800 white- and blue-collar occupations. Those employees who demonstrate superior technical skills and who wish to advance are often promoted to first-line supervisor. First-line supervisors have the responsibility for carrying out the day-to-day operations of the organization through their subordinates. Army first-line civilian supervisors can be found in depots, training centers, hospitals, command headquarters, and a variety of other activities throughout the U.S. and the world. Their subordinates hold occupations in a wide variety of professional, technical, clerical, and administrative fields. Selection of the best first-line supervisors is critical for the efficient and effective accomplishment of the Army's mission.

An Army-wide effort, begun in 1986, is underway to determine the best approaches for selecting and developing first-line civilian supervisors. The project is called the Professional Development of Supervisors Study (PDS²) and is being conducted in two phases. Phase 1 involves gathering information about the job of first-line supervisors, the ideal personal characteristics of first-line supervisors, and the process whereby first-line supervisors are selected and trained. Phase 2 involves implementing improvements in the selection and development of first-line supervisors based on the findings of Phase 1.

Phase 1 has three parts. The purpose of the first part is to determine the procedures currently being used to select and develop civilian first-line supervisors. This effort was recently completed by the Atlanta Field Office, U.S. Army Civilian Personnel Center, Office of the Deputy Chief of Staff for Personnel (ODCSPER).

The purpose of part two is to gather job information which can be used to improve the selection of first-line supervisors. A current concern for the Army is that those individuals responsible for the selection of first-line supervisors may not be using the most appropriate criteria in making their selection decisions. A job analysis is needed to identify supervisory selection criteria (i.e., knowledges, skills, abilities and other characteristics [KSAOs] that supervisors must possess to perform their supervisory tasks effectively). The job of the first-line supervisor requires both supervisory and technical KSAOs. The present effort will address only the supervisory, non-technical aspects of the first-line supervisor's job.

The purpose of part three is to identify ideal characteristics and traits of civilian first-line supervisors and recommend methods for developing them in job incumbents.

A special advisory group (SAG) has been established to provide expertise and logistical support to the researchers conducting parts two and three. The SAG consists of senior civilian and military personnel knowledgeable about first-line supervisory functions.

Job Analysis of First-Line Supervisors

The objective of this research project is to conduct a job analysis of Army civilian General Schedule and Wage Grade first-line supervisory positions. The critical supervisory tasks performed by civilian Army first-line supervisors and the critical knowledges, skills, abilities, and other characteristics (KSAOs) that supervisors say they must possess to perform the supervisory tasks will be identified. In the future, researchers and Civilian Personnel Officers (CPOs) can use this job analysis information to improve such personnel functions as selection, training, and performance appraisal. One of the most pressing needs for job analysis data is in the development of content valid selection procedures. The job analysis data can also be used by CPOs to classify jobs, develop position descriptions, and perform a variety of other personnel functions.

Content Validity and Selection Systems

The job analysis will result in the identification of supervisory KSAOs that incumbents must possess to be effective first-line supervisors. Future efforts can be conducted to develop a content-valid selection system by devising ways of assessing the degree to which job applicants possess the KSAOs.

Content validity is not established through statistical relationships, but involves the degree to which predictors (in this case, KSAOs) are related to the universe of behaviors (i.e., supervisory tasks) being assessed. In other words, the closer the job requirements assessed by the KSAOs match those needed in job performance, the stronger the evidence of content validity (Fleishman & Quaintance, 1984; Gavin, 1977; Guion, 1978).

There has been a substantial increase in the use of content validation strategies for selection, and the appropriateness of this methodology has been documented in the Society for Industrial and Organizational Psychology Inc., (1987) Principles for the Validation and Use of Personnel Selection Procedures and the Uniform Guidelines on Employee Selection Procedures (1978) which specifically permit content validation alone for establishing the job relatedness of selection systems. The procedures contained in this plan will allow the demonstration of both content validity and job relatedness.

Content validity is traditionally assessed by evaluating the way in which a selection procedure is developed and the extent to which it represents a specified domain identified as required for effective job performance. For example, a written test containing items that adequately sample a specified knowledge area would be considered content valid if that

knowledge area were identified as job related. Job relatedness in the present context is demonstrated by the mechanism of linking job content (i.e., supervisory tasks) to selection procedures (i.e., measures of KSAOs). Although content validity does not provide a quantitative measure of the relationship between selection test scores and measures of job performance, it implies that this relationship will be strong.

As jobs go from non-supervisory (technical) to supervisory (non-technical), the inferences made during the linkage process (i.e., the conclusions made by the SMEs about whether or not KSAOs are required for completion of supervisory tasks) become increasingly susceptible to error. For example, a task that most carpenters perform is "hammer nails into wood". For this task, it is clear that carpenters must have skill at "using a hammer". On the other hand, a supervisory task for a first-line supervisor, is probably "motivating employees". What are the KSAOs required to perform this task? To answer this question, considerable inferences must be made. Since there is typically a larger gap between tasks and KSAOs for supervisory jobs than for non-supervisory jobs, the procedures by which the KSAOs are derived for supervisors must be rigorously developed, carefully followed, and well documented. This is particularly important during the KSAO linkage phase. By following the procedures outlined in this plan, the potential problems in demonstrating content validity and job relatedness can be avoided.

The procedures which are proposed in this plan are consistent with the requirements of the Standards for Educational and Psychological Tests (1985), the Uniform Guidelines on Employee Selection Procedures (1978) and the Society for Industrial and Organizational Psychology Inc., (1987) Principles for the Validation and Use of Personnel Selection Procedures.

Definition of First-Line Supervisor

The target population for this research is Army civilian first-line supervisors. This includes both those in the General Schedule and Wage Grade classifications. To clarify the nature of this population the terms "supervisor" and "first-line supervisor" are defined in this section.

The term "supervisor" appears in several federal documents. The most complete definition appears in the Supervisory Grade Evaluation Guide (SGEG). The SGEG, published by the U.S. Civil Services Commission in 1976, provides standards for the classification of General Schedule positions. According to this guide, the title "supervisor" is reserved for incumbents who direct the work of at least three subordinates and who have a sufficient level of supervisory responsibility to be considered part of the management team. As stated on page 43, supervisors are responsible for "insuring timely performance of a satisfactory amount and quality of work, and duties of reviewing work products of subordinates and accepting, amending or

rejecting work. It also involves at least three of the first four, and six of the eight following duties and responsibilities:

1. Planning work to be accomplished by subordinates. Setting priorities and preparing schedules for completion of work;
2. Assigning work to subordinates based on priorities, selective consideration of the difficulty and the requirements of the assignments, and the capabilities of employees;
3. Evaluating performance of subordinates;
4. Giving advice, counsel, or instruction to individual employees on both work and administrative matters;
5. Interviewing candidates for positions in his unit. Making recommendations for appointment, promotion, or reassignment involving such positions;
6. Hearing and resolving complaints from employees. Referring group grievances and the more serious complaints not resolved to higher level supervisors;
7. Effecting minor disciplinary measures such as warnings and reprimands. Recommending action in more serious cases;
8. Identifying developmental and training needs of employees. Providing or making provision for such development and training."

A second definition of the term "supervisor" appears in the Federal Service Labor-Management Relations Statute (i.e., Title VII of the Civil Service Reform Act of 1978). Within this document, a supervisor is described as an individual with the authority to hire, assign, promote, reward, transfer, furlough, layoff, recall, suspend, discipline, or remove employees, to adjust their grievances, or to effectively recommend such actions. In addition, a supervisor is someone who exercises independent rather than merely routine or clerical judgments.

The above definitions help clarify the term "supervisor". For the purposes of the present investigation, the term "first-line supervisor" is defined as a supervisor whose subordinates are all non-supervisors. The most complete definition of a first-line supervisor appears in an Office of Personnel Management (OPM) classification guide for Wage Grade supervisors. (Job Grading Standards For Supervisors, FPM Supplement 512-1, August, 1982). Wage Grade first-line supervisors are defined as individuals who supervise nonsupervisory workers, are accountable to their supervisor for the quantity and quality of work done, act within general instructions and standard procedures, and assure the efficient accomplishment of work assigned to their subordinates based upon general schedules set by higher management. The supervisory responsibilities of first-line supervisors are described

within the three categories of planning, work direction, and personnel administration. Planning includes establishing deadlines, setting priorities, and assigning work considering factors such as the number and skill of workers. Work direction includes motivating workers, explaining assignments, defining standards of work, and coordinating the unit's progress with other units. Personnel administration includes scheduling and approving leave, conducting performance appraisals, adjusting grievances, and instituting disciplinary actions.

Summary of Expected Outcomes

Most research on first-line supervisors has been conducted in the context of a single organizational setting, including little or no diversity in the number and "types" of jobs studied. These conditions limit the ability to identify different "types" of supervisory jobs and their corresponding requirements. The present effort will examine a large number of first-line supervisors working in a great diversity of jobs and organizational settings. The size and scope of this project will thus result in a number of important applied and theoretical outcomes, in addition to meeting the previously stated technical objectives. These include:

Applied Outcomes

1. The identification of "types" of first-line supervisors and an explication of the important similarities and differences among job "types" will allow Army personnel specialists/managers to differentially make personnel-related decisions (e.g., career development, training, placement, transfer, etc.) about first-line supervisors.
2. The identification of critical supervisory tasks performed and KSAOs required will provide a legally defensible foundation for development of selection/promotion/training procedures for first-line supervisors (e.g., assessment centers, job knowledge tests, situational interviews, behavioral consistency/training and experience ratings, etc.)
3. The critical supervisory tasks and required KSAOs produced by this job analysis will assist managers, civilian personnel officers, and selecting officials in such diverse activities as developing vacancy announcements, crediting plans, position descriptions and Individual Development Plans (IDPs).
4. The identification of contextual factors which moderate task performance, task importance and KSAO requirements for different "types" of first-line supervisor jobs will provide valuable information regarding the generalizability of training programs and various career development plans from one "type" of first-line supervisory position to another.

Theoretical Outcomes

Because of the large and diverse population being studied, the results of this project will have important implications for research on first-line supervisory positions. To date, no research projects have systematically examined task and KSAO similarities and differences across a broad representative sample of first-line supervisors from multiple organizations and occupations. Therefore, the results of this project will be more generalizable and theoretically more significant than past research. Specifically:

1. This project will make a significant contribution to the development of comprehensive taxonomies of first-line supervisory work behaviors, job requirements, and job "types".
2. This project will identify a number of contextual factors (e.g., size of installation, span-of-control) which may moderate first-line supervisory tasks. This topic has been largely ignored in previous studies of first-line supervisors.

The following sections of this report describe in detail how the job analysis will be conducted. Specifically, this paper will explain how supervisory tasks and KSAOs will be identified, how "types" of first-line supervisors will be identified, and how the interrelationships between tasks and KSAOs will be established for each "type" of first-line supervisor.

TECHNICAL APPROACH

Overview of the Technical Approach

The technical objectives to be accomplished in this research are:

1. To identify the important (critical) supervisory tasks that are performed by Army civilian first-line supervisors at all levels.
2. To identify the knowledges, skills, abilities, and other characteristics (KSAOs) that supervisors say are required for effective first-line supervision and for the selection of first-line supervisors.

To accomplish these objectives, the following steps are required:

Develop Survey Instrument

One of the most important steps in this effort is the development of a survey instrument that will be used to identify the important (critical) supervisory (non-technical) tasks performed by civilian first-line supervisors. The instrument will include a comprehensive listing of supervisory tasks and a listing of contextual factors that might influence the first-line supervisor's job. The instrument will also include appropriate instructions for completing the survey, rating scales, and background/biodata questions and be compatible with appropriate data analysis measurement technology (e.g., Comprehensive Occupational Data Analysis Program [CODAP]). The CODAP "system" is a set of analysis tools and procedures which use, as raw material, information provided by the incumbents of the job being studied, usually in the form of responses to a job analysis inventory. This system may be used to revise classification structures, assess job related skills, verify the relevance of training courses and a host of other applications in which an accurate knowledge of job content at the task level is desirable.

Administer and Analyze Survey

This step has three major parts. The first is to administer the inventories, the second is to receive and process the inventories, and the final step is to analyze the data from the inventories. The primary outcomes of the data analyses will be: (1) the identification of "types" of first-line supervisors and (2) the identification of the critical tasks performed by each type of first-line supervisor.

Identify the KSAOs Required for the Selection of First-Line Supervisors

KSAOs relevant for the selection of first-line supervisors will be identified and linked to critical tasks separately for each supervisory "type" in a series of Subject Matter Expert (SME) workshops. Based on the judgments collected in these workshops, important KSAOs will be identified for each job "type".

Prepare Final Report

The final report will describe all project activities. Specifically, the report will describe development and administration of the inventory, analyses of inventory survey responses, and identification of KSAOs required for selection to first-line supervisory positions. Thus, the report will serve as an audit trail for demonstrating the job-relatedness/content validity of the KSAOs that will be defined. The report will be comprehensive and will demonstrate the adequacy of the job analysis to a third party not expert in the nature and purpose of occupational analysis.

The next section provides a technical description of the procedural steps to be taken in this research. These steps are outlined in the flow diagram presented in Figure 1. The project milestone chart is shown in Figure 2. The milestone chart and the technical approach described in this paper are organized in terms of the six tasks that were stipulated in the original Statement of Work (SOW) for this effort.

Task I: Develop Research Plan

(The present document is the research plan).

Task II: Develop Survey Instrument

The objective of Task II is to develop a comprehensive task inventory which includes the supervisory (non-technical) tasks that are performed by Army civilian first-line supervisors. The development of the task statements is one of the most critical issues in this project. The validity of the job descriptions and KSAO requirements, and their subsequent usefulness and defensibility in developing selection criteria, are dependent upon obtaining reliable, valid, and complete information about the non-technical tasks performed by first-line supervisors. Thus, considerable care will be taken to ensure that: (a) task statements are exhaustive, clearly written, and at an appropriate level of specificity; (b) response scales yield appropriate information and are compatible with data analysis (e.g., CODAP) requirements; and, (c) instructions for the survey instrument are easy to follow.

The proposed methodology has been designed to produce a survey instrument that is highly job-related (i.e., the results of which will be useful for making personnel decisions). The procedures described below are similar to those used by Gandy, Rosen, Wall, Lilienthal, Crum, Carlyle, and Stern (1983) in their job analysis for the Army Civilian Personnel Administration Career Field. They have also been employed in the current projects being conducted for the Communications Career Program and for the Logistics and

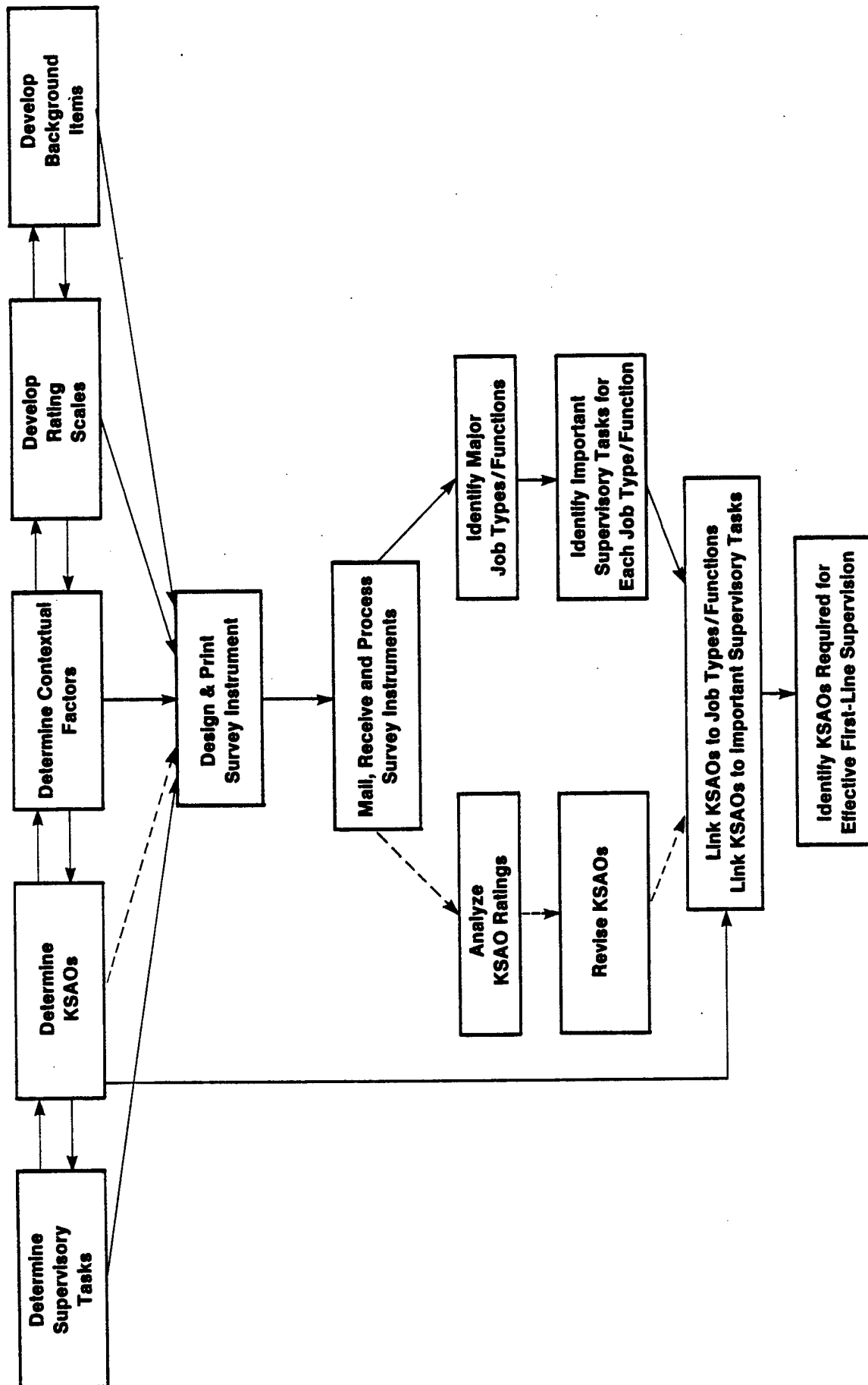


Figure 1. Job Analysis Steps

----- Steps followed if KSAOs are included in survey instrument

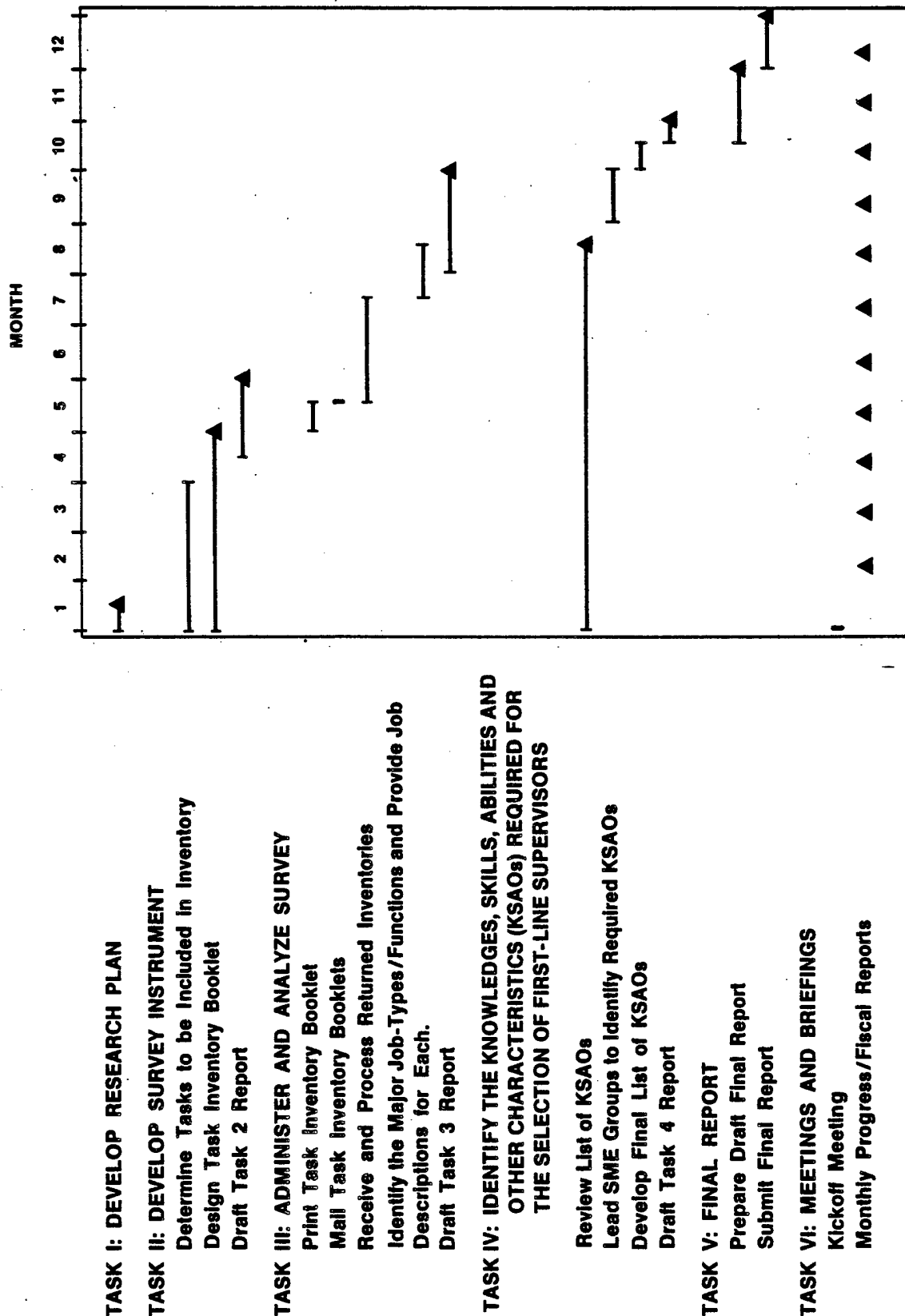


Figure 2. Project Milestone Chart

Acquisition Management Program (LOGAMP) which includes the Supply, Transportation and Materiel Maintenance Management Career Programs.

Develop Preliminary Task List

Identification of the tasks for inclusion in the inventory will be accomplished in two steps. First, existing job descriptions, related Army and Federal government materials that describe first-line supervisor jobs (e.g., Supervisor Grade Evaluation Guide), and the literature on supervision and leadership will be reviewed. Additionally, individual interviews will be conducted to develop a preliminary list of tasks. Once a preliminary list has been developed, job incumbents will review and revise it during a series of workshops.

The task inventory development process will begin by obtaining and reviewing available job descriptive materials for first-line supervisory positions. This work is in progress and preliminary findings are discussed below. Documentation describing first-line supervisors are being gathered from the Office of Personnel Management, the Department of the Army, and other federal agencies. Examples of the types of materials that have been gathered include results of previous job analyses, Supervisory Grade Evaluation Guides, job descriptions, classification standards, qualification standards, existing task inventories, crediting plans, training materials, Individual Development Plans for first-line supervisors, and other relevant Army civilian supervisory research or literature. Furthermore, research relevant to this project conducted in both the non-federal public and private sectors will be examined. Finally, both the LOGAMP and the Communications job analysis projects developed supervisory tasks. All of these materials will be used in the development of the preliminary task list. These materials will be reviewed by in-house job analysis experts to construct a preliminary list of tasks describing incumbent responsibilities in first-line supervisory positions.

Several job analysis studies of first-line supervisors have already been reviewed and have suggested supervisory tasks and KSAOs that may be relevant for the job of Army civilian first-line supervisor. These studies include Byham (1982), Dowell and Wexley (1978), Flanders and Utterback (1985), MacDonald (1982), Northrop, Cowen, Plas, and Fulmer (1978), Prien (1963), and Turner (1979). Two of the studies, Prien (1963) and Dowell and Wexley (1978), are described below and provide an indication of the research that appears in the literature.

Prien (1963) developed the Supervisor Position Description Questionnaire (SPDQ) to study general "functions" or work categories associated with first-line supervisors. As a starting point, Prien listed several functions he thought were likely to apply to first-line supervisor jobs. He then generated task statements within each function. Twenty-four first-line supervisors from the same company rated the applicability of the tasks to their jobs. A factor analysis of the data yielded seven factors titled: Manufacturing Process Supervision; Manufacturing Process Administration;

Employee Supervision; Manpower Coordination and Administration; Employee Contact and Communication; Work Organization, Planning, and Preparation; and Union-Management Relations.

Dowell and Wexley (1978) expanded on Prien's work and created the Supervisor Task Description Questionnaire (STDQ). Their study contained the following refinements:

1. Items were included only if they represented work activities (Prien had included traits, abilities, and technical requirements of supervisors).
2. Work activities were generated by first-line supervisors.
3. Work activities were generated without a priori assumptions about their frequency or importance.
4. A larger sample was used and included supervisors from several companies.

The STDQ was completed by 251 first-line supervisors from 40 plants, encompassing six production technologies and eight functions. A factor analysis of the data resulted in seven dimensions: Working with Subordinates, Organizing Work of Subordinates, Work planning and Scheduling, Maintaining Efficient/Quality Production, Maintaining Safe/Clean Work Areas, Maintaining Equipment and Machinery, and Compiling Records and Reports.

Two reviews of the literature on first-line supervisors have also been useful in the present project (Carlyle, 1986; Hill, Kerr, & Broedling, 1984). Hill, Kerr, and Broedling (1984) reviewed the literature and suggested the following taxonomy as representative of the task categories of first-line supervisors:

1. Planning and scheduling work and the associated record keeping and report writing.
2. Human relations counseling.
3. Coordination and control of subordinates' work.
4. Maintaining external relations.
5. Managing performance-reward contingencies.
6. Maintaining quality and efficiency.
7. Maintaining safety and cleanliness.
8. Maintaining machinery and equipment.

9. Selecting employees.
10. Training employees.
11. Stimulating suggestions.
12. Maintaining union-management relations.

Carlyle (1986) reviewed the literature and reported that nine KSAOs appear in most studies of first-line supervisors. These KSAOs are oral communication, written communication, interpersonal relations, planning and organizing, monitoring others' work, decision-making, leadership, initiative, and stress tolerance.

Three other research projects have been reviewed and provide insights into the supervisory tasks and KSAOs of Army civilian first-line supervisors. The U.S. Army Management Engineering Training Activity (USAMETA) developed a list of tasks and KSAOs for Army civilian managers as part of a training needs assessment system. The tasks and KSAOs appear in a document written by McAreavy, King, and Eichhorn entitled Army Civilian Executive and Manager Development System (ACE-MDS) Vol 2 published in February 1985.

Corts (1982) developed a procedure for evaluating candidates for Federal trades and labor first-line supervisory positions. He used the job elements method to generate a list of 31 "subelements". Subelements are behavioral characteristics that distinguish superior from less qualified workers. The subelements will be useful for suggesting KSAOs needed by first-line supervisors in the present project.

Finally, a document prepared by the Career Development Systems Branch of OPM entitled The Management Excellence Framework: A Competency-Based Model of Effective Performance for Federal Managers has also been reviewed. This document presents a taxonomy of "management functions" that Federal managers perform as well as a taxonomy of "effective characteristics". In the terminology of job analysis, the functions are roughly equivalent to tasks and the characteristics roughly equivalent to KSAOs needed to perform the tasks.

A review of some of the literature on leadership including Bass (1981), Fleishman (1953; 1973), Fleishman and Hunt (1973), Gibb (1969), Hollander and Julian (1969), Stodgill (1974), Vroom (1976), and Yukl (1981) is also underway. Some of the dimensions studied in this literature (e.g., motivating, planning, developing subordinates) overlap with tasks and KSAOs identified in the literature on first-line supervisors.

The research mentioned above provides a good starting point for this project. Caution must be taken, however, in assuming that any task or KSAO found in another study will necessarily be applicable to the population of Army civilian first-line supervisors. Some of the previous studies have been performed in the private sector. While many aspects of the first-line supervisor's job in the private sector are shared with their public sector

counterparts, there are probably some differences. Thus, in defining the work behaviors of first-line supervisors care must be taken to remember that the target job is the Army civilian first-line supervisor.

It is desirable to get to the field as soon as possible. The information that is obtained from printed material will prove useful for developing preliminary task lists. However, no amount of printed material can substitute for the face-to-face interaction with knowledgeable SMEs. Not only can SMEs explain aspects of the job that cannot be found in any documentation, but they can also clarify statements that exist in Position Descriptions (PDs) and related documents. In other projects (e.g., Communications Career Program), this approach has resulted in higher quality preliminary task lists. However, it should be mentioned that the "success" of this approach may have been due to the technical nature of the jobs being examined. It may be the case that in non-technical supervisory jobs, higher quality written information will be available. Therefore, fewer interviews may be necessary. Working with Army representatives, the amount of interviewing that needs to be done to fully understand the job of first-line civilian supervisor in the Army will be determined after job analysts have had a chance to collect and review relevant documentation.

Consistent with the Army Civilian Personnel Administration (CPA) job analysis effort and the Communications and LOGAMP work, the preliminary pool of task statements will be sorted into taxonomic duty areas (job performance dimensions). The benefits to be gained by using such a taxonomy for inventory development are twofold (Fleishman & Quaintance, 1984). First, it leads to an exhaustive task list because the parameters of the behavioral domain will have been previously specified. Second, it is much easier for SMEs to deal with rationally developed segments of their job rather than their job as a whole. Therefore, the use of the taxonomic duty categories will not only lead to a quality task list, but it will achieve this goal with efficient use of SMEs. Categorizing tasks by rational duty areas facilitates the organization and subsequent review of the task list by job incumbents and facilitates their recall of tasks (Fleishman and Quaintance, 1984).

Once the duty headings that comprise the taxonomy are identified, the next step in constructing the preliminary task list will be to edit tasks and sort them into categories. Specifically, job analysts will combine identical or similarly worded tasks, split up statements containing multiple tasks, and revise confusing or inappropriate terminology. Careful attention will also be given to the level of specificity of the task statements. Task specificity has important implications for both clustering tasks statements into identifiable jobs/functions and for identifying task-relevant KSAOs. Tasks that are too general may not differentiate persons at different job levels during the clustering process. Tasks that are too specific may overly differentiate persons at different job levels. In addition, if tasks are defined either too specifically or too generally, it will be difficult to judge reliably which KSAOs underlie task performance. Thus, the objective is to write tasks at an intermediate level of generality.

It should be noted that it may not be possible to write all supervisory tasks at the same level of specificity. In a recent study of leaders, Steinberg, van Rijn, and Hunter (1986), found it necessary to write tasks which varied from specific to general in order to focus on those aspects of leadership which were hypothesized to differentiate the tasks that leaders perform within various subgroups (e.g., line and staff, branches) and various levels within the Army. While it may be necessary to adopt a similar strategy, every effort will be made to maintain the level of task specificity throughout the task list. The product of this step will be a task list organized by duty categories.

An important objective of this project is the identification of similarities and differences between first-line supervisory job "types" that may moderate the importance of KSAOs for successful job performance. Thus, there is a need to identify groups of first-line supervisor jobs, which allow the detection of similarities and differences in the job requirements. The KSAOs underlying successful performance in each group would then be identified. Thus, the domain of task statements selected should capture the important differences in requirements between first-line supervisory jobs, as well as identify common requirements across jobs. The approach should also provide a comprehensive description of the KSAO requirements for each job-type.

The specificity level of tasks should thus be guided by the aforementioned requirements. The job tasks selected should be specific enough so as to differentiate positions with different requirements (that is, incumbents in positions with different requirements should respond differently to the tasks). It is possible that some supervisory functions such as planning, organizing, etc. are shared in large degree by virtually all supervisory jobs, regardless of job title (McCall, Morrison, & Hannan, 1978). On the other hand, it is not expected that task statements can be so specific that each job becomes a group by itself. Such an idiosyncratic description for each job would undermine efforts to examine the similarities and differences among first-line supervisory positions. In essence, the task statements should be specific enough to differentiate requirements, without losing the element of generalizability important to all systematic personnel systems.

Develop Preliminary Contextual Factor List

In both the Communications and the LOGAMP projects, tasks alone were not sufficient to describe the jobs in a way that would be maximally useful for deriving KSAOs. It was also necessary to include a section in the task inventory on the commodities, systems, or equipment dealt with by incumbents, because those items appeared to influence the complexity of the jobs over and above the tasks. For example, consider the task item, "Develop supply/demand forecasts for commodities, equipment, facilities, or supplies." The complexity of this task--and hence the KSAO requirements--is influenced by the nature of the commodity dealt with. Some commodities are produced by relatively mature industries with little volatility, and thus supply/demand forecasting would be relatively routine. Others--high technology products as an example--are characterized by greater uncertainty.

For first-line supervisors, the "commodity" dealt with most often is people. Various contextual factors (e.g., size of installation, span-of-control, technology) may potentially influence the supervisor-subordinate work relationship. To address this possibility, a section in the inventory will be devoted to contextual factors that potentially moderate task performance. These factors will be determined through review of the literature, SME input, and discussion with Army representatives (e.g., SAG members).

Several studies have found that the tasks performed by first-line supervisors are not equivalent to those performed by middle and upper level managers (Pavett & Lau, 1983; Tornow & Pinto, 1976). It is also possible that substantial differences exist within the first-line supervisor classification. Luthans and Martinko (1979), and Steinmetz and Todd (1979) contend that factors such as organizational size and type of technology should have a substantial impact on the activities of first line supervisors. Sharon (1983) compared naval shipyard production shop foremen and general foremen to determine whether differences exist between the two groups. Task statements were written to cover both jobs. Two hundred fifty-one foremen and 136 general foremen from six different shipyards rated the applicability of the tasks to their jobs. It was found that 10 of 31 tasks were performed significantly more by general foremen than by shop foremen.

Dowell and Wexley (1978) grouped supervisors by functional area and type of technology. Although no support was found for differences in work dimensions based on technology, they did find differences in the frequency with which tasks were performed between functions. For example, in the Maintaining Efficient/Quality Production dimension, more time was spent on these activities by supervisors in production functions (i.e., preparation of raw materials for production, production of components, production of finished products) than supervisors in maintenance or housekeeping functions.

This research will examine several variables or contextual factors that may lead to significant differences in tasks performed and KSAOs required by first-line supervisors. Contextual factors in this research refer to certain organizational and work group characteristics (e.g., size of Army installation, number of subordinates) which may explain KSAO and task differences between the groups of supervisors which might exist. It may be found, for example, that a distinguishing characteristic of supervisors in one group is their large span-of-control which in turn explains their high scores on tasks dealing with delegation and organization.

Based upon previous research, the following contextual factors are expected to help explain the groups of first-line supervisors which might be identified: size of Army installation, supervisor's span-of-control, and blue-collar versus white-collar subordinates.

Size of Army installation. It has been suggested that, in the private-sector, first-line supervisors in small organizations assign a variety of tasks to their subordinates. The supervisor may, at times, assign a different task to each member of their crew (Steinmetz & Todd, 1979). In contrast, first-line supervisors in large private-sector organizations usually have a more restricted range of activities to assign their workers. Furthermore, large organizations have usually developed specialized departments (e.g., personnel department, training department, R & D) which conduct activities that, in small organizations, are the sole responsibility of first-line supervisors (Luthans & Martinko, 1979).

To some degree the size of the Army post may similarly impact the job of some Army civilian first-line supervisors. For example, the general maintenance and operations supervisors in a small post may become involved in maintenance operations throughout the installation and therefore experience substantial fluctuations in the demand for their services. Comparable crews in larger posts may have more specialized areas of operation and therefore have more predictable workloads. The importance of planning for such supervisors may therefore be a function of the size of their installation.

It is also possible that certain departments (e.g., personnel, training) in large posts tend to have more (or less) influence on their first-line supervisors. One can speculate that the amount of time the first-line supervisor devotes to coordinating his/her efforts with such staff people is different in the larger posts.

Span-of-control. The number of subordinates assigned to an Army civilian first-line supervisor varies. No maximum number is specified, however, based upon the SGEG standards, the minimum for classification as a first-line supervisor is three. Several factors are likely to influence a supervisor's span-of-control. There is evidence that span-of-control is related to the type of technology which is employed (Woodward, 1958; 1965). For example, first-line supervisors in process technologies (e.g., oil refineries) typically need fewer subordinates than first-line supervisors in mass production technologies (e.g., auto assembly plants). The leadership and managerial skills of supervisors probably also influences the number of subordinates assigned to them (Porter, Lawler, & Hackman, 1975).

It seems reasonable to hypothesize that the relative time supervisors spend on tasks will vary with their span-of-control. Large spans should translate into more time spent planning, delegating and allocating resources to subordinates. Small spans should translate into more time for hands on supervision of subordinates.

Type of employee: Blue-collar versus white-collar. White-collar employees are generally more educated than blue-collar employees. Broadwell and House (1986) characterize such technical and professional people as likely to: (a) have a relatively high need for professional growth and a relatively low need for social interaction, (b) be more loyal to their technology or profession than to their organization, (c) expect a pleasant work environment, and (d) be reluctant to let work demands infringe on their

personal values or lifestyle. The work of white-collar employees is often considered inherently challenging. Thus motivating white-collar workers may not be as serious a problem for first-line supervisors. Instead the supervisor must permit the worker substantial freedom while maintaining enough control to ensure that assignments are completed. The supervisor must also provide satisfying rewards which encourage employees to remain with the organization. Finally, the supervisor must help smooth over conflicts among subordinates resulting from differences in professional viewpoints.

Although many blue-collar jobs are quite challenging, others are not. Luthans and Martinko (1979) suggest that due to the repetitive and physically demanding nature of some blue-collar jobs, the first-line supervisor needs to devote extra time toward motivating employees. Supervisors may also have to closely monitor the tasks of employees in such jobs.

Size of Army installation, span-of-control, and blue-collar versus white-collar subordinates are not the only contextual factors which may influence the tasks performed by first-line supervisors. Many other contextual factors are being considered, including type of technology, amount of cooperation required between work groups, the leadership skills of the supervisor, the availability of materiel resources, the physical working conditions (e.g., time spent out-of-doors versus in-doors), and the potential for accidents or illness. Size of installation, span-of-control, and type of subordinate were singled out and described above because the research literature is supportive of their potential for explaining differences in the groups of supervisors which might be identified in this study. In addition, these three can be measured with a high degree of accuracy and are easy to obtain. Additional contextual factors will be discussed with SMEs and Army representatives (e.g., SAG members) and based upon their recommendations, factors might be added.

Develop Preliminary KSAO List

A list of KSAOs that would be rated for importance or relevance to each respondent's job is also being considered for inclusion in the inventory. For the present effort, this list of KSAOs would be developed and refined through the same procedure as the task list. There are two advantages in collecting KSAO information in the inventory. One is the enhanced defensibility of the job analysis documentation that would result from its being developed by such a large group of respondents, as opposed to relying on relatively fewer SMEs. A second advantage would be that the requirements of all jobs would be derived from a standardized set of KSAOs.

For the present effort, however, there may exist some problems associated with including KSAOs in the mail-out survey. First, the addition of KSAOs to the mail-out survey could make it too long to be practical. Second, and more important, it may not be reasonable to expect SMEs to understand the meaning of complex KSAOs without the training that would be given in KSAO workshops. For more technical jobs, KSAO meanings are usually relatively clear. For more non-technical, supervisory jobs, the meaning of a KSAO becomes somewhat more ambiguous. In other job analysis projects,

SMEs had some initial difficulty in understanding distinctions between abilities like Deductive and Inductive Reasoning even when carefully defined (Fleishman & Quaintance; 1984). The personal interaction that occurs in the workshop appears critical for SME understanding of the distinctions drawn among various KSAOs. Thus, it may not be advisable to include a KSAO section in a job analysis inventory for first-line supervisory positions that require relatively more abstract KSAOs.

The pros and cons of including a KSAO section will be discussed with the Army. It is important to note, that if included this method would be designed to supplement (provide a working guide to) --not replace-- the KSAO workshops (Task IV). Additionally, a KSAO list would only be added to the inventory if the task list was not prohibitively lengthy and the Army supported its inclusion.

Regardless of where KSAO ratings are made, the KSAO list will be reviewed and edited by supervisors and Army representatives (e.g., SAG) to ensure that KSAOs are written clearly. Additionally, KSAOs will be written in sufficient detail so as to be operationally defined as required by the Uniform Guidelines.

Identify Workshop Sites and Participants

A crucial issue for the claim of content validity and job-relatedness of selection procedures is to ensure that the products of the job analysis are based upon input provided by knowledgeable, representative samples of job incumbents. Representative samples of SMEs must be involved in the development of survey instruments, rating of the tasks and KSAOs, and linkage of KSAOs to tasks. There are several considerations in selecting an appropriate sample of SMEs to participate in the job analysis effort.

First, all "types" of supervisors must be represented in the workshops. For example, first-line supervisors, even in the same job series, may be performing somewhat different jobs at different locations or in different functions (e.g., an arsenal as compared to a staff office). Second, the sample results should reflect what would have been obtained if the entire first-line supervisor population had been interviewed. Finally, a sampling procedure that minimizes both personnel time and project expenditures, while obtaining the highest quality information should be used.

To best meet these criteria, a stratified random sampling approach will be used when selecting SMEs for all phases of this project. Therefore, the first step in identifying workshop sites and participants is to define the population of first-line supervisors. That is, identify the number, location, occupational family and job series of Army civilian first-line supervisors.

The selection of a representative sample of first-line supervisors is perhaps the most important part of this task. It has both practical and legal implications for the work at hand. From a practical standpoint, job

analysts obviously do not have the time or resources to speak with every job incumbent, nor would they be able to conduct a workshop at every location at which supervisors are located. However, by carefully constructing homogeneous strata of first-line supervisors, cases can be sampled that are representative of each type of first-line supervisor. From a legal standpoint, the identification of these strata is imperative. To be able to assert that the tasks and KSAOs are content valid, care must be taken to ensure that they were identified with input from a representative sample of job incumbents.

Identify work sites. A five-step process is required to select the sample of SMEs for workshops. The steps are:

- Step 1. Determination of the number of first-line supervisors in each occupational family.
- Step 2. Determination of the number of first-line supervisors in each occupational series.
- Step 3. Determination of the number of first-line supervisors in each occupational family in each location.
- Step 4. Classification of locations according to "site types".
- Step 5. Site selection.

Step 1. Ideally, information concerning the number of first-line supervisors in each occupational family would be available in an automated file. Unfortunately, this is not the case. The Army Civilian Personnel Information System (CIVPERSINS) contains information on the total number of supervisors in each occupational family. It does not distinguish among first, second, or third line supervisors, however. Thus, information concerning the total number of supervisors in each occupational family was obtained from the CIVPERSINS. This information appears in Table 1. The next step requires adjusting these numbers to reflect the number of first-line supervisors in each occupational family. To accomplish this, we will ask knowledgeable civilian personnel to estimate the proportion of supervisors that are first-line supervisors. If the answer is 75%, for example, the approach would be to multiply each frequency in Table 1 by .75. The resulting frequencies would reflect the estimated number of first-line supervisors in each occupational field.

Step 2. A similar approach to the one described above is required to estimate the number of first-line supervisors in each occupational series. Table 2 shows the total number of supervisors in each occupational series. This information was obtained from the CIVPERSINS also. If, for example, 75% of all supervisors were first-line supervisors, each frequency would be multiplied by .75. The resulting frequencies would reflect the estimated number of first-line supervisors in each occupational series.

Table 1 Number of Army Civilian Supervisors by Occupational Family

Occupational Family #	Occupational Family Title	N	Percent of All Supervisors
0000	Miscellaneous Occupations	1,526	4.30
0100	Soc Science, Psychology & Welfare	816	2.30
0200	Personnel Mgmt & Industrial Relations	1,455	4.10
0300	General Administrative	6,698	18.89
0400	Biological Sciences	210	.59
0500	Accounting and Budget	2,489	7.02
0600	Med, Hosp, Dent, & Public Health	655	1.85
0700	Veterinary Medical Science	3	--
0800	Engineering & Architecture	5,128	14.46
0900	Legal and Kindred	163	.46
1000	Information and Arts	769	2.17
1100	Business and Industry	2,343	6.61
1200	Copyright Patent Trademark	11	.03
1300	Physical Sciences	503	1.42
1400	Library and Archives	197	.56
1500	Mathematics & Statistics	370	1.04
1600	Equipment, Facilities, & Services	759	2.14
1700	Education	1,491	4.20
1800	Investigation	28	.08
1900	Qty Assurance, Insp, & Grading	396	1.12
2000	Supply	2,308	6.51
2100	Transportation	646	1.82
2500	Wire Comm Eqpt Inst & Maintenance	95	.27
2600	Electronic Eqpt Inst & Maintenance	443	1.25
2800	Electrical Installation & Maintenance	145	.41
3100	Fabric and Leather Work	38	.11
3300	Instrument Work	56	.16
3400	Machine Tool Work	246	.69
3500	General Services and Support Work	91	.26
3600	Structural and Finishing Work	11	.03
3700	Metal Processing	80	.23
3800	Metal Work	110	.31
3900	Motion Picture, Radio, TV & Eqpt Operator	5	.01
4000	Lens and Crystal Work	4	.01
4100	Painting and Paperhanging	75	.21
4200	Plumbing and Pipefitting	72	.20
4300	Pliable Materials Work	16	.05
4400	Printing	133	.38
4600	Wood Work	161	.45
4700	General Maintenance & Operation	783	2.21
4800	General Equipment Maintenance	65	.18
5000	Plant and Animal Work	71	.20
5200	Miscellaneous Occupations	15	.04
5300	Industrial Equipment Maintenance	460	1.30
5400	Industrial Equipment Operator	280	.79
5700	Transportation/Mobile Eqpt Operator	476	1.34
5800	Transportation/Mobile Eqpt Maintenance	687	1.94
6500	Ammunition, Explosives, Toxic Materials	153	.43
6600	Armament Work	109	.31
6900	Warehousing and Stock Handling	996	2.81
7000	Packing and Processing	163	.46
7300	Laundry, Dry Cleaning & Processing	22	.06
7400	Food Preparation and Serving	273	.77
7600	Personal Services	23	.06
8200	Fluid Systems Maintenance	20	.06
8600	Engine Overhaul	26	.07
8800	Aircraft Overhaul	98	.28
Total		35,465	101.01*

Source: Department of the Army, Civilian Personnel Information Systems
(CIVPERSINS)

*The total percent is greater than 100 because of rounding error.

Table 2 Number and Percentage of Army Civilian Supervisors by Occupational Family and Occupational Series¹

Occupational Family	Occupational Series	N	Percent ²
0000 - Miscellaneous Occupations	--	1526	4.30
	0006	1	0.07
	0018	96	6.29
	0019	2	0.13
	0020	6	0.39
	0023	22	1.44
	0025	331	21.69
	0026	1	0.07
	0028	11	0.72
	0030	138	9.04
	0050	7	0.46
	0060	1	0.07
	0062	2	0.13
	0080	143	9.37
	0081	384	25.16
	0083	98	6.42
	0085	282	18.48
	0090	1	0.07
0100 - Social Science, Psychology & Welfare	--	816	2.30
	0101	104	12.75
	0110	29	3.55
	0131	1	0.12
	0132	198	24.26
	0134	1	0.12
	0150	1	0.12
	0160	1	0.12
	0170	9	1.10
	0180	77	9.44
	0185	82	10.05
	0186	6	0.74
	0187	10	1.23
	0188	232	28.43
	0189	63	7.72
	0193	2	0.25

(continued)

Table 2 (continued)

Occupational Family	Occupational Series	N	Percent ²
0200 - Personnel Management & Industrial Relations	--	1455	4.10
	0201	279	19.18
	0203	22	1.51
	0204	404	27.77
	0205	169	11.62
	0212	208	14.30
	0221	121	8.32
	0222	3	0.21
	0223	5	0.34
	0230	65	4.47
	0233	37	2.54
	0235	66	4.54
	0260	76	5.22
0300 - General Administrative	--	6698	18.89
	0301	1308	19.53
	0303	341	5.09
	0304	6	0.09
	0305	159	2.37
	0309	3	0.04
	0312	12	0.18
	0313	52	0.78
	0318	78	1.16
	0319	2	0.03
	0322	77	1.15
	0330	1	0.01
	0332	259	3.87
	0334	1145	17.09
	0335	95	1.42
	0340	107	1.60
	0341	370	5.52
	0342	335	5.00
	0343	733	10.94
	0344	92	1.37
	0345	411	6.14
	0346	500	7.46
	0350	19	0.28
	0356	63	0.94
	0357	10	0.15
	0359	4	0.06

(continued)

Table 2 (Continued)

Occupational Family	Occupational Series	N	Percent ²
	0360	3	0.04
	0362	3	0.04
	0382	47	0.70
	0388	1	0.01
	0389	6	0.09
	0390	43	0.64
	0391	175	2.61
	0392	109	1.63
	0393	127	1.90
	0394	2	0.03
0400 - Biological Sciences	--	210	0.59
	0401	93	44.29
	0403	19	9.05
	0405	5	2.38
	0408	17	8.10
	0413	8	3.81
	0414	11	5.24
	0430	2	0.95
	0437	1	0.48
	0460	29	13.81
	0462	3	1.43
	0470	1	0.48
	0471	13	6.19
	0480	3	1.43
	0482	2	0.95
	0486	3	1.43
0500 - Accounting and Budget	--	2489	7.02
	0501	131	5.26
	0503	66	2.65
	0504	2	0.08
	0505	122	4.90
	0510	641	25.75
	0511	216	8.68
	0525	249	10.00
	0530	53	2.13
	0540	175	7.03

(Continued)

Table 2 (continued)

Occupational Family	Occupational Series	N	Percent ²
	0544	82	3.29
	0545	254	10.20
	0560	485	19.49
	0561	13	0.52
0600 - Medical, Hospital, Dental, & Public Health	--	655	1.85
	0601	4	0.61
	0602	77	11.76
	0610	112	17.10
	0620	2	0.31
	0621	1	0.15
	0622	4	0.61
	0630	2	0.31
	0633	1	0.15
	0642	3	0.46
	0644	92	14.05
	0645	9	1.37
	0646	14	2.14
	0647	23	3.51
	0649	14	2.14
	0660	33	5.04
	0661	3	0.46
	0662	1	0.15
	0665	6	0.92
	0667	6	0.92
	0668	1	0.15
	0669	34	5.19
	0670	1	0.15
	0671	26	3.97
	0673	13	1.98
	0675	36	5.50
	0679	53	8.09
	0680	3	0.46
	0681	1	0.01
	0682	1	0.15
	0683	2	0.31
	0688	4	0.61
	0690	6	0.92
	0698	1	0.15
	0699	66	10.08

(Continued)

Table 2 (continued)

Occupational Family	Occupational Series	N	Percent ²
0700 - Veterinary Medical Science	--	3	0.01
	0701	3	100.00
0800 - Engineering & Architecture	--	5128	14.46
	0801	1196	23.32
	0802	281	5.48
	0803	35	0.68
	0804	1	0.02
	0806	15	0.29
	0807	13	0.25
	0808	36	0.70
	0809	79	1.54
	0810	1657	32.31
	0817	54	1.05
	0818	22	0.43
	0819	51	0.99
	0830	344	6.71
	0840	2	0.04
	0850	89	1.74
	0855	665	12.97
	0856	270	5.27
	0858	2	0.04
	0861	64	1.25
	0873	1	0.02
	0892	2	0.04
	0893	36	0.70
	0895	39	0.76
	0896	172	3.35
	0899	2	0.04
0900 - Legal and Kindred	--	163	0.46
	0905	93	57.06
	0945	1	0.61
	0950	6	3.68
	0962	27	16.56
	0963	7	4.29
	0967	1	0.61
	0986	7	4.29

(continued)

Table 2 (continued)

Occupational Family	Occupational Series	N	Percent ²
	0990	10	6.13
	0992	4	2.45
	0995	3	1.84
	0998	4	2.45
1000 - Information and Arts	--	769	2.17
	1001	114	14.82
	1010	3	0.39
	1015	21	2.73
	1016	2	0.26
	1020	44	5.72
	1035	143	18.60
	1040	7	0.91
	1051	1	0.13
	1056	71	9.23
	1060	80	10.40
	1071	44	5.72
	1081	2	0.26
	1082	53	6.89
	1083	69	8.97
	1084	87	11.31
	1087	28	3.64
1100 - Business and Industry	--	2343	6.61
	1101	427	18.22
	1102	873	37.26
	1103	14	0.60
	1104	4	0.17
	1105	48	2.05
	1106	63	2.69
	1144	339	14.47
	1150	38	1.62
	1152	128	5.46
	1170	159	6.79
	1171	16	0.68
	1173	231	9.86
	1176	3	0.13

(continued)

Table 2 (continued)

Occupational Family	Occupational Series	N	Percent ²
1200 - Copyright Patent Trademark	--	11	0.03
	1221	3	27.27
	1222	8	72.73
1300 - Physical Sciences	--	503	1.42
	1301	154	30.62
	1306	3	0.60
	1310	95	18.89
	1311	10	1.99
	1313	1	0.20
	1315	3	0.60
	1316	5	0.99
	1320	102	20.28
	1321	11	2.19
	1340	16	3.18
	1341	12	2.39
	1350	46	9.15
	1360	6	1.19
	1370	3	0.60
	1371	19	3.78
	1372	2	0.40
	1373	6	1.19
	1374	1	0.20
	1382	2	0.40
	1384	1	0.20
	1386	4	0.80
	1399	1	0.20
1400 - Library and Archives	--	197	0.56
	1410	178	90.36
	1411	5	2.54
	1412	12	6.09
	1421	2	1.02
1500 - Mathematics & Statistics	--	370	1.04
	1515	277	74.86
	1520	46	12.43
	1521	1	0.27
	1529	2	0.54
	1530	9	2.43

(continued)

Table 2 (continued)

Occupational Family	Occupational Series	N	Percent ²
	1531	8	2.16
	1550	27	7.30
1600 - Equipment, Facilities, & Services	--	759	2.14
	1601	235	30.96
	1630	2	0.26
	1640	63	8.30
	1654	40	5.27
	1658	13	1.71
	1667	8	1.05
	1670	398	52.44
1700 - Education	--	1491	4.20
	1701	175	11.74
	1702	64	4.29
	1710	806	54.06
	1712	443	29.71
	1722	1	0.07
	1740	1	0.07
	1750	1	0.07
1800 - Investigation	--	28	0.08
	1801	6	21.43
	1802	4	14.29
	1810	4	14.29
	1811	7	25.00
	1812	3	10.71
	1815	1	3.57
	1890	3	10.71
1900 - Quality Assurance, Inspection & Grading	--	96	1.12
	1910	396	100.00
2000 - Supply	--	2308	6.51
	2001	549	23.79
	2003	372	16.12
	2005	716	31.02
	2010	379	16.42
	2030	92	3.99

(continued)

Table 2 (continued)

Occupational Family	Occupational Series	N	Percent ²
	2032	11	0.48
	2050	76	3.29
	2091	113	4.90
2100 - Transportation	--	646	1.82
	2101	129	19.97
	2102	16	2.48
	2130	164	25.39
	2131	65	10.06
	2132	36	5.57
	2134	63	9.75
	2135	9	1.39
	2144	2	0.31
	2150	36	5.57
	2151	6	0.93
	2152	56	8.67
	2161	5	0.77
	2181	59	9.13
2500 - Wire Communication Equipment Installation & Maintenance	--	95	0.27
	2501	22	23.16
	2502	60	63.16
	2504	4	4.21
	2508	3	3.16
	2511	6	6.32
2600 - Electronic Equipment Installation & Maintenance	--	443	1.25
	2601	38	8.58
	2602	16	3.61
	2604	287	64.79
	2606	18	4.06
	2608	1	0.23
	2610	81	18.28
	2614	2	0.45
2800 - Electrical Installation & Maintenance	--	145	0.41
	2801	17	11.72
	2805	56	38.62
	2810	43	29.66

(continued)

Table 2 (continued)

Occupational Family	Occupational Series	N	Percent ²
	2854	22	15.17
	2892	7	4.83
3100 - Fabric & Leather Work	--	38	0.11
	3101	5	13.16
	3103	1	2.63
	3105	23	60.53
	3106	5	13.16
	3111	4	10.53
3300 - Instrument Work	--	56	0.16
	3306	33	58.93
	3314	7	12.50
	3359	14	25.00
	3364	2	3.57
3400 - Machine Tool Work	--	246	0.69
	3401	42	17.07
	3414	166	67.48
	3416	26	10.57
	3417	2	0.81
	3422	1	0.41
	3428	1	0.41
	3431	8	3.25
3500 - General Services and Support Work	--	91	0.26
	3501	7	7.69
	3502	21	23.08
	3507	2	2.20
	3511	2	2.20
	3545	1	1.10
	3546	2	2.20
	3566	56	61.54
3600 - Structural and Finishing Work	--	11	0.03
	3601	1	0.09
	3602	2	18.18

(continued)

Table 2 (continued)

Occupational Family	Occupational Series	N	Percent ²
	3603	7	63.64
	3609	1	9.09
3700 - Metal Processing	--	80	0.23
	3701	10	12.50
	3703	44	55.00
	3707	1	1.25
	3711	18	22.50
	3712	4	5.00
	3722	1	1.25
	3735	1	1.25
	3741	1	1.25
3800 - Metal Work	--	110	0.31
	3801	12	10.91
	3802	2	1.82
	3806	62	56.36
	3807	2	1.82
	3809	24	21.82
	3817	3	2.73
	3858	3	2.73
	3869	1	0.91
	3872	1	0.91
3900 - Motion Picture, Radio, TV & Equipment Operator	--	5	0.01
	3901	3	60.00
	3910	2	40.00
4000 - Lens and Crystal Work	--	4	0.01
	4010	3	75.00
	4015	1	25.00
4100 - Painting and Paperhanging	--	75	0.21
	4101	2	2.67
	4102	72	96.00
	4104	1	1.33

(continued)

Table 2 (continued)

Occupational Family	Occupational Series	N	Percent ²
4200 - Plumbing and Pipefitting	--	72	0.20
	4201	1	1.39
	4204	48	66.67
	4206	20	27.78
	4255	3	4.17
4300 - Pliable Materials Work	--	16	0.05
	4301	11	68.75
	4352	2	12.50
	4361	1	6.25
	4373	2	12.50
4400 - Printing	--	133	0.38
	4401	55	41.35
	4402	12	9.02
	4407	2	1.50
	4414	9	6.77
	4417	52	39.10
	4419	3	2.26
4600 - Woodwork	--	161	0.45
	4601	9	5.59
	4602	40	24.84
	4604	31	19.25
	4605	12	7.45
	4607	67	41.61
	4616	2	1.24
4700 - General Maintenance & Operation	--	783	2.21
	4701	320	40.87
	4714	11	1.40
	4715	22	2.81
	4737	11	1.40
	4742	80	10.22
	4745	1	0.13
	4749	334	42.66
	4754	3	0.38
	4756	1	0.13

(continued)

Table 2 (continued)

Occupational Family	Occupational Series	N	Percent ²
4800 - General Equipment Maintenance	--	65	0.18
	4801	37	56.92
	4805	10	15.38
	4806	8	12.31
	4807	3	4.62
	4816	3	4.62
	4840	2	3.08
	4850	2	3.08
5000 - Plant and Animal Work	--	71	0.20
	5001	11	15.49
	5003	24	33.80
	5026	29	40.85
	5048	7	9.86
5200 - Miscellaneous Occupations	--	15	0.04
	5201	6	40.00
	5205	4	26.67
	5210	4	26.67
	5222	1	6.67
5300 - Industrial Equipment Maintenance	--	460	1.30
	5301	54	11.74
	5306	49	10.65
	5309	17	3.70
	5310	3	0.65
	5312	1	0.22
	5318	217	47.17
	5323	1	0.22
	5324	13	2.83
	5330	2	0.43
	5334	11	2.39
	5350	38	8.26
	5352	19	4.13
	5378	35	7.61
5400 - Industrial Equipment Operator	--	280	0.79
	5401	36	12.86
	5402	71	25.36

(continued)

Table 2 (continued)

Occupational Family	Occupational Series	N	Percent ²
	5403	1	0.36
	5406	15	5.36
	5407	3	1.07
	5408	8	2.86
	5409	27	9.64
	5413	24	8.57
	5415	3	1.07
	5419	1	0.36
	5423	17	6.07
	5426	45	16.07
	5427	7	2.50
	5430	1	0.36
	5435	5	1.79
	5439	12	4.29
	5440	4	1.43
5700 - Transportation/Mobile Equipment Operator	--	476	1.34
	5701	75	15.76
	5703	126	26.47
	5704	21	4.41
	5705	13	2.73
	5716	60	12.61
	5723	26	5.46
	5724	89	18.70
	5725	46	9.66
	5729	15	3.15
	5736	1	0.21
	5737	2	0.42
	5738	2	0.42
5800 - Transportation/Mobile Equipment Maintenance	--	687	1.94
	5801	72	10.48
	5803	481	70.01
	5806	4	0.58
	5823	129	18.78
	5876	1	0.15

(continued)

Table 2 (continued)

Occupational Family	Occupational Series	N	Percent ²
6500 - Ammunition, Explosives, Toxic Materials	--	153	0.43
	6501	19	12.42
	6502	116	75.82
	6505	9	5.88
	6511	17	11.11
	6517	11	7.19
6600 - Armament Work	--	109	0.31
	6601	16	14.68
	6605	31	28.44
	6606	10	9.17
	6610	22	20.18
	6641	16	14.68
	6652	2	1.83
	6656	12	11.01
6900 - Warehousing and Stock Handling	--	996	2.81
	6901	67	6.73
	6904	43	4.32
	6907	692	69.48
	6910	17	1.71
	6912	38	3.82
	6914	139	13.96
7000 - Packing and Processing	--	163	0.46
	7001	18	11.04
	7002	96	58.90
	7004	13	7.98
	7006	31	19.02
	7009	4	2.45
	7010	1	0.61
7300 - Laundry, Dry Cleaning & Processing	--	22	0.06
	7301	2	9.09
	7304	7	31.82
	7305	7	31.82
	7306	4	18.18
	7307	2	9.09

(continued)

Table 2 (continued)

Occupational Family	Occupational Series	N	Percent ²
7400 - Food Preparation and Serving	--	273	0.77
	7401	11	4.03
	7402	5	1.83
	7404	101	37.00
	7407	101	37.00
	7408	55	20.15
7600 - Personal Services	--	23	0.06
	7601	1	4.35
	7603	2	8.70
8200 - Fluid Systems Maintenance	--	20	0.06
	8201	3	15.00
	8255	12	60.00
	8268	5	25.00
8600 - Engine Overhaul	--	26	0.07
	8601	3	11.54
	8602	20	76.92
	8610	3	11.54
8800 - Aircraft Overhaul	--	98	0.28
	8801	8	8.16
	8807	4	4.08
	8852	81	82.65
	8862	5	5.10
TOTAL	35465		

¹ Data Source: Department of the Army, Civilian Personnel Information System (CIVPERSINS)

² The percentage of supervisors for each occupational series is reported within occupational family. The percentage of supervisors within an occupational family are computed across all families.

- Step 3. To determine the number of first-line supervisors in each occupational family at each location, a two-way table of occupational family by location will be constructed based on the information contained in the CIVPERSINS. As in Steps 1 and 2, each cell would be multiplied by .75, for example, to reflect the estimated numbers of first-line supervisors.
- Step 4. In this step, working with SMEs, a typology of location "types" will be developed and each location will be sorted into one category. For example, operating, staff, HQ, posts, depots, and arsenals might comprise the different "types" of installations that exist in the Army. Each location will be placed into one type category. The result will be groups of locations based upon installation type, a variable that might affect the job of the first-line supervisor.
- Step 5. In this step, the number of sites to be visited will be determined, and a sample selected from each installation type group. Since supervisory tasks may vary as a function of the supervisor's location, sites with different characteristics will be selected. For example, selected sites will represent installations of various sizes and various geographic areas. From a practical standpoint, selected sites will represent a large diversity of occupational families. In this way the most efficient use of the time spent at each installation can be made. The information contained in Tables 1 and 2 will be used to determine the exact mix of SMEs required at each location.

Selecting locations for SME workshops in accordance with this five-step process will permit the identification of a representative sample of SMEs to assist in the development of lists of tasks, KSAOs and contextual factors. The survey instrument will thus be job-related and content valid.

Identify workshop participants. The selection of first-line supervisors to participate in each workshop must be accomplished with the same degree of rigor as the selection of sites. Ideally, a subsample will be drawn randomly from each stratum, taking into consideration stratum size, stratum internal variability, and the expense of drawing cases from the stratum. Although random sampling within strata will be used, careful monitoring of the sampling process will be required so that the final sample is representative of the incumbent population in terms of gender, race, and ethnic background. Discussion with Army representatives will identify the characteristics of individuals best suited for the task at hand. At a minimum, the individuals selected should be knowledgeable about the jobs. Of equal importance, they should be interested in the project and willing to participate.

Inventory Development Workshops

Once a sampling plan has been specified and approved, a series of job analysis site visits to review and revise the preliminary task, contextual

factors, and KSAO lists will be conducted. In developing preliminary lists, great reliance will be placed on individual and small group input. At this stage, using group interviews as the approach has several advantages over other possible methods (e.g., questionnaires, individual interviews, etc.). First, group interviews typically yield higher quality data than other approaches. Second, using a workshop format allows for the efficient collection of data in a relatively short period of time.

Should a group interview approach not be feasible due to scheduling or other problems, individual interviews using a structured questionnaire format to revise the task, contextual factors, and KSAO lists are recommended.

During these workshops, project job analysts will meet with selected groups of job incumbents at Army installations. Each workshop will be one half day and will involve six to eight SMEs. SMEs will consist of current job incumbents from one or more of the stratification sampling cells.

In the first part of these workshops, SMEs will review the list of duty areas for comprehensiveness and overlap. If participants find similar or overlapping dimensions, they will be asked for suggestions to revise the list. If new duties are suggested, participants will be asked to identify the tasks that are relevant to each new job performance dimension (duty).

Using the duty areas as a starting point, the tasks listed under each duty will be reviewed and revised. Participants will consider one duty at a time and will be asked to: (a) identify any missing tasks for that duty, (b) eliminate tasks that are no longer performed, (c) combine overlapping or redundant tasks, (d) split up heterogeneous tasks, (e) recategorize tasks into other duties if necessary, and (f) clarify inappropriate or confusing task terminology. This process will continue until all tasks in each duty area have been reviewed. Based upon the information obtained from all job analysis workshops, a revised task list will be developed.

A standardized task development protocol will be developed and used in these workshops. The protocol will contain two parts: (1) a project overview and (2) instructions for writing task statements.

Project overview. This is a common courtesy and has a great impact on the quality and usefulness of information obtained in workshops. Generally, in a 20-minute overview an explanation of what the project is about, what the outcome will be, where project staff are in the development, and the role of the workshop participants can be given. Impressing upon workshop participants the nature of the effort and the genuine need for their assistance usually gives SMEs a better understanding of what is required of them and produces a cooperative atmosphere.

Instructions for writing task statement. Workshop administrators will instruct SMEs on how to write task statements. This will be accomplished primarily by using a number of handouts similar to those that appear in Gael's (1983) job analysis book.

The chart below shows four supervisory task statements subdivided among the three components of a task statement.

WHAT IS DONE	TO WHAT	QUALIFIER (WHEN NECESSARY)
Inspect	work area	for safety hazards.
Write	memos.	
Inform	subordinates	of training opportunities.
Develop	performance standards	at the beginning of an employee's rating period.

Qualifying information is needed to round out task statements under the following conditions:

WRITING JOB TASK STATEMENTS (QUALIFYING INFORMATION)

HOW

For tasks that can be accomplished in more than one way.

Example: Motivate subordinates by nominating superior performers for formal honors or awards.

WHY

For tasks that can have multiple purposes.

Example: Revise work schedule to meet changes in the demands for unit's products or services.

WHERE

For tasks that have multiple situations or conditions.

Example: Assure materials are delivered to building site.

WHEN

For tasks that can be performed at different times.

Example: Inspect subordinate's work upon completion of assignment.

A number of additional guidelines will be presented:

Specific verbs and nouns. Task statements should be sufficiently specific so that the work accomplished is clearly defined and the task statement is concise and unambiguous. Explicit action verbs should be used to specify each task performed. passive verbs or verbs that describe processes - for example, "assure," "determine," "evaluate," "indicate," "ensure," "supervise," and "verify" - should not be used to express task statements if possible. It should be noted, however, that while these represent guidelines to follow, sometimes a passive verb is the best if not the only way to write a statement.

One action, one object. As a rule, tasks can be performed independently of other tasks, and only one action and one object should be included in a task statement.

Stand-alone content. Each task statement should be intelligible when standing apart from other task statements.

Familiar words. Task statements should be expressed in language that is familiar to job incumbents. If employees at different locations are known to use different terminology for the same procedure, form, equipment, or other item, alternate words should be included in those task statements. Only the most common abbreviations and acronyms should be used.

Consistent use of words. The same actions or objects should be described by the same verbs or nouns to avoid confusion. Synonyms should not be interchanged-for instance, copy and transcribe or complete and prepare.

Compatibility with rating scales. A task statement should be written in a manner that enables respondents to answer questions about task attributes, such as "How important is each task to your job?" "How difficult is each task?" "How much time do you spend performing each task?"

When these guidelines are kept in mind, it is relatively easy to write task statements in a standardized structure. After the workshop participants complete their revision of the task list, they will generate KSAOs required for each of the duty areas. After generating new KSAOs, SMEs will discuss the KSAO wording. Specifically, KSAOs must be written in terminology that first-line supervisors will understand and they must also be operationally defined. That is, they must be written so that they can be clearly linked to job performance. Finally SMEs will review the list of contextual factors. The products of these SME workshops will be a revised list of tasks, contextual factors, and KSAOs that represent the civilian first-line supervisor jobs in the Army.

Design Task Inventory Booklet

A task inventory will be developed that is compatible with data analysis (e.g., CODAP) requirements. In addition to the list of tasks and contextual factors, a sheet will be provided at the end of each section so that incumbents can provide additional tasks or contextual factors.

There are several important considerations in designing the inventory booklet. These include developing appropriate response scale(s), selecting useful background/biodata questions, and writing unambiguous instructions. Each of these topics is discussed below.

A variety of scales for rating task statements exist, including relative time spent, frequency of performing, relative importance, and difficulty of learning. Based on the particular goals of this project, a seven-point importance scale and a seven-point frequency of performing scale for rating each task are recommended.

An "importance" scale in addition to a "frequency of performance" scale is recommended because, in many cases, large amounts of time can be spent performing relatively unimportant and trivial tasks. Perhaps more importantly, very little time may be spent on extremely important tasks. This is particularly true of supervisory positions (consider certain decision-making activities, for example). The choice of a seven-point scale is based on previous research that has shown seven anchors to be sufficient for differentiating jobs (Fleishman & Quaintance, 1984; Fleishman & Mumford, 1986; Wissman, 1980). The final decision regarding the choice of scale(s) and number of scale points will be made after consultation with the Army.

Contextual factors will also be examined by this inventory. Items tapping installation size, span of control, blue- versus white-collar, working conditions, supervisor-subordinate relationship and other factors which might lead to differences in task performance, will be included. The responses to these factors will provide valuable information in the task data interpretation in Task III. The list of factors will be derived from the literature, SME interviews and workshops. The list of contextual factors will be submitted to the Army for review approval. Various background items will also be selected for inclusion in the survey. Background data are used to describe the sample and to assess the degree to which particular groups perform the same or different work behaviors.

Possible items to be used include pay grade, career program, office type, and number of individuals supervised. Several data analysis subroutines can be invoked to describe different parts of the sample based upon the background variables. Therefore, it is necessary to discuss with the Army any possible descriptive information that might be useful for purposes of documentation.

To prevent receiving incomplete or unusable task inventories, care must be taken to write precise and comprehensive instructions. For example, if instructions appear complicated, some potential respondents will be discouraged from participation in the inventory. It is likewise important to convince respondents that their responses will be treated confidentially.

A pilot test of the task inventory and instructions will be conducted on a sample of 30 job incumbents to estimate the time necessary to complete the task inventory and to identify any poorly worded instructions, ambiguous task statements, or difficulties using the task rating scale(s). A sample of incumbents from various grades and occupations will be selected to participate in a D.C. area pilot test. The task inventory will be modified on the basis of the pilot test results, as required.

The resulting task inventory will be submitted to the Army Research Institute (ARI) and the SAG for review and approval. Once a final inventory is approved, it will be prepared for field administration. To reduce the possibility of respondent errors, responses will be made directly in the inventory booklets on optically scannable forms (as opposed to using separate answer sheets). A single booklet eliminates the possibility of coding or keypunch errors and is easier for respondents to use and thus increases their willingness to participate.

Draft Task II Report

Within two weeks after the conclusion of Task II, five copies of a draft technical report will be provided for Army review. This report will document the events of Task II, including a full description of the survey instrument development, criteria, and rationale for all major decisions. This report will become part of the project documentation in the final report, pending Army approval.

Task III: Administer and Analyze Survey

There are three major objectives of Task III. The first is to administer the inventories; the second is to receive and process the inventories; and the third is to analyze the data from the inventories. Administration of the inventories is not a complex task, but a very important one. It is important to take appropriate measures up front to insure a good return rate and quality data rather than speculate after the fact, why return rates were not acceptable. Described below are procedures that have been employed in past projects to insure good return rates. Excellent return rates cannot be guaranteed, but measures can be taken to increase the probability of that occurrence.

After the inventories have been returned, data quality checks and return rates will be examined. Project staff will carefully track which locations have or have not responded, and take appropriate follow-up action. This tracking occurs from the initial mailing to the receipt of the final package before the "stop accepting" cut-off date.

Next, the inventory data will be analyzed through a series of CODAP analyses. The primary outcomes of these analyses will be: (a) the identification of meaningful job clusters (i.e., groups of similar first-line supervisors), (b) the identification of the characteristics of the groups identified by the cluster analysis, and (c) the identification of critical tasks in each cluster for the subsequent linkage to KSAOs. It is of paramount importance that proper interpretation of the CODAP analyses occur. A prerequisite for proper interpretation is that the correct programs have been invoked, on the correct group of respondents. That is, decisions as to which CODAP subroutines should be run on which groups will be made with input from the Army. In short, proper interpretation of the CODAP analyses is crucial for the subsequent development of job requirements for first-line supervisors. Interpretation should be done by job analysts and with input from SMEs.

Print Task Inventory Booklet

The total number of booklets printed will be 15 percent greater than the number of incumbents selected in the sample. Thus, it will be possible to re-mail inventories if some are lost. An inventory printing and scanning subcontract will be awarded at the time the inventory is ready for Army review. Thus, by the time the inventory is approved, the printer can begin work immediately. Furthermore, as with all products resulting from this research, the inventory will become the property of the Army and proprietary or copyright material will not be included in the inventory.

Mail Task Inventory Booklets

Pre-mailing activities. Prior to mailing the booklets, accompanying materials must be developed. These materials are designed to explain administration procedure and help insure a high return rate. The procedures described below have proven successful in past job analysis projects. They produced quality data and good return rates. Of course, the approval of the procedures by the Army will be obtained.

A point-of-contact (POC) responsible for receipt, distribution, and collection of inventories will be identified at each location. The administration procedures to be followed by the POC at each location entails five steps:

- 1) Check Materials and Notification of Receipt,
- 2) Verify the Employee Roster,
- 3) Administer the Inventories,
- 4) Check-in Completed Inventories, and
- 5) Mail the Completed Inventories.

Each of these steps is briefly described below.

Step 1. Check Materials and Notification of Receipt. Included in the package sent to each location, there will be a list of the accompanying materials. The materials are: 1) an instruction sheet explaining what needs to be done; 2) an employee roster of all job incumbents who are to receive an inventory, including grade and occupational family; 3) the inventories; and 4) the return privacy envelopes in which employees will seal their completed inventories. Next, the POC at each location is directed to notify the inventory coordinator of receipt of the package within 48 hours. POCs within the contiguous 48 states are requested to notify the inventory coordinator by telephone. OCONUS POCs are requested to provide notification by electronic message.

Step 2. Verify the Employee Roster. The employee roster will include the name, grade, and series of incumbents who are to receive the inventory. The list will contain names of all supervisors at all levels (i.e., first, second, and above). Thus, the POC will be required to identify and select only the first-line supervisors from the list of all supervisors. Additionally, lag time between personnel actions and the subsequent recording of the actions into the Army's personnel data base may result in rosters being out of date. Personnel who have recently changed series, grade, supervisory status, or recently had a promotion may not be located as listed on the roster. Therefore, we include additional inventories in each package so that additional personnel in the target positions, at each location may respond to the inventory. The instructions explain how to add the names of personnel who do not appear on the roster and how to administer the inventories. The instructions also explain how to deal with absent personnel or other personnel who are unable to complete the inventory.

Step 3. Administer the Inventories. In this section, procedures for the administration of the inventories are explained. Also, alternative methods for those locations that for some reason can not comply with the administration procedures are presented. The procedures impose consistency on the administration of the inventories to the greatest extent possible. The standardization of procedures helps to insure the quality of the inventory data. It is recognized, however, that at some locations some compromises may be required to meet the needs of the Army.

Step 4. Check-in Completed Inventories. The check-in of returned inventories is a very simple, but important step in the administration procedure. This will tell the data processor who did or did not complete an inventory. On the employee roster, there is a place for a check beside each name. This check indicates that the inventory has been completed and returned to the POC. For persons who do not respond, the reason for non-response (e.g., TDY, leave, PCS) is recorded next to the name on the roster. The employee roster becomes part of the official documentation of the job analysis. It is therefore important to keep an accurate employee roster.

Step 5. Mail the Completed Inventories. Finally, the POC is instructed to mail the inventories and the original copy of the employee roster (POC

will retain a copy of the roster) to the appropriate address. A suspense date of approximately eight weeks for return of inventories will be provided.

As previously mentioned, these procedures are suggested because they have been successfully used in previous Army civilian job analysis projects. For this effort, they may be altered to suit the needs of the Army. For this procedure to work, the following information is required from the Army: (1) the name and address of a POC at each location who will be responsible for the inventory administration, and (2) for each location, a current roster of incumbents in supervisory positions, which includes name, grade, and series.

In addition to a standardized procedure for task inventory administration, some additional factors might contribute to efficient inventory administration. The key to a high inventory return rate is communication throughout civilian personnel channels. The degree to which incumbents expect to receive a job analysis inventory and understand the importance of completing it directly impacts return rate. It is quite useful to get the appropriate influential personnel involved as soon as possible. They can spread the word to incumbents through formal and informal channels. That is, inform the population of respondents early on, by telling them what will take place, how it will be accomplished, why it is important, and who needs to participate.

One approach to informing inventory recipients was recently used in the Communications Career Program job analysis. The career program manager wrote an article describing the project for the Communication Career Program newsletter. The article appeared several months prior to inventory mailing. In the present context this article could be written and distributed through the Weekly Activity Summary (WAS). Additionally, a letter to each POC two to four weeks prior to receipt of inventories, and administration instructions that explain the project and its role have proven useful. It is also suggested, in this letter, that the POC inform local inventory recipients about the project. The sooner and the more information that is disseminated throughout the field, the higher the return rate and the data quality.

Mail booklets. The task inventories will be mailed to a stratified random sample of 4,000 civilian first-line supervisors. This sample will be determined by proportionally sampling supervisors from the previously developed occupational family by location matrix. (Task II).

In Task II the number of first-line civilian supervisors in the Army will have been estimated. If the proportion of first-line supervisors is estimated to be 75 per cent of all supervisors, for example, then a population of 26,599 ($35,465 \times .75$) first-line supervisors would be projected. A mailing of 4,000 inventories represents 15 per cent of the first-line supervisor population (4,000 - 26,599).

The next step would be to proportionally sample supervisors from each cell of the occupational family by location matrix. A sample of 15 per cent

from each cell is desired. Since some of the incumbents in each cell are above first-line supervisor (25%, for example) and allowing for transfers, terminations, TDY, etc. it will be necessary to oversample. A randomly drawn sample of 30 per cent from each cell will be requested from Army. Using the CIVPERSINS, Army can generate a random list of names for each occupational family by location cell. An example of this process is given below:

- o Occupational Family 0000 - Location 9999 has 100 supervisors according to the CIVPERSINS.
- o The estimate is that 75 per cent, or 75 of the 100 are first-line supervisors.
- o A 15 per cent sample is desired, so 11 supervisors must be identified to receive inventories.
- o A random list of 30 names (i.e., 30% of the 100 supervisors is requested). The list will contain names that are second- and third-line supervisors, as well as individuals who are unavailable for one reason or another. The assumption is, however, that starting with a list of 30, a POC should be able to identify 11 available first-line supervisors to receive inventories.

Rather than selecting a sample of sites, every location should be included in the mailing. This is suggested for a number of reasons. First, every installation will have the opportunity to provide input to defining the requirements for effective first-line supervision. Second, while some of these sites are small, location size might affect the supervisor's job. Thus, input is required from these smaller sites to address this issue. Third, recent job analysis experience shows that higher return rates can be expected from sites receiving smaller numbers of inventories. Thus, not only will input be obtained from every location, a higher overall return rate should result. If inventories are not mailed to every location, sampling from within the previously developed installation type groups will be used to select a representative sample of locations.

Inventories should be mailed first class (certified mail, return receipt requested) to the point-of-contact. As mentioned, survey sites will be instructed to acknowledge receipt of inventories within 48 hours. Additionally, working through civilian personnel channels, project staff will follow-up on non-responding sites to ensure that all sites receive inventories. It is helpful if a person in the civilian personnel arena is designated "inventory coordinator". This person would assist in tracking inventories from initial mailing through return to the data processor. The advantage of such a person is that they could work through formal Army channels, as required.

Receive and process returned inventories. Using the procedures described above, a detailed record of the task inventory return rate by location will be kept. Upon approval by the Army, telephone calls will be made to POCs who do not notify the job analysis inventory coordinator of

package receipt within the allotted 48 hours. Likewise, if receipt is acknowledged and the inventories are not received by the suspense date, phone calls will be used as a follow-up. The decision to stop accepting task inventories and to begin data analyses will be subject to Army approval. Completed task inventories will be checked to identify unreliable response patterns or incomplete inventories. The decision as to which data, if any, should be excluded from data analyses, will be subject to Army approval. As the inventories are being received, a running count of what has been sent in, what is usable (given the Army's approval of the decision rule), and what is still outstanding will be kept. This information will be made available to the Army. As mentioned in Task II, an optically scannable format will be used for the inventories. In large-scale job analyses this format, with both items and responses in the same booklet, eliminates many potential problems. Thus, one can be confident that at least 99 percent accuracy in the processing of the inventories will be attained.

The completed task inventories will be optically scanned by the same company that prints the inventory booklets. The processing of returned inventories will result in: (1) a magnetic data tape, meeting the necessary specifications (9 Track, 1600 BPI), containing all the responses to the task inventory; (2) a 5 1/4 inch floppy disk containing all the responses to the task inventory (this is required for at CODAP, the micro computer based implementation of CODAP); and (3) project job analysts will produce a written analysis and summary of the additional tasks, KSAOs (if included), and/or comments provided by the respondents to the inventory. Copies of these will be provided to the Army.

Identify the Major Job-Types/Functions

The new micro-computer based version of CODAP will be used to analyze the task inventory data. The analysis is basically a two step process. First, different "types" of supervisors are identified by a cluster analysis. Next, for each of the identified types of supervisors, descriptive data are generated including job descriptions. The details of these two steps will be described below.

At a minimum, the following CODAP subroutines will be run: The enabling runs that set up the job history files necessary to invoke all of the other CODAP programs, PRTJOB, JOBMIG (now called GRPMAT), CORSET, DIAGRM, and OVRLAP. These runs will provide us with the necessary information to interpret inventory responses, provide the necessary job descriptions, and any other descriptive information. Additionally, further CODAP programs that might be of interest to the Army will be explored.

Brief abstracts for the subroutines mentioned above, as well as for some others that may potentially be of interest appear on the next page. The major purpose of the CODAP analyses will be to: (a) define supervisory clusters/groups that have distinguishable tasks, and (b) determine the rank order of tasks on importance and/or frequency of performance for each group so defined.

CODAP identifies groups by using a hierarchical clustering procedure which takes place on the basis of individual, then group, measures of similarity (or commonality). Commonality is essentially the proportion of common tasks for two or more incumbents weighted by incumbent ratings of, in this case, importance and/or frequency of performance. The clustering program compares the ratings made by each individual with the ratings of each other individual, and successively forms groups of the most similar individuals. As groups are formed, member ratings are averaged to form a composite profile for subsequent comparison with other groups or remaining unclustered individuals. When carried out to the end, the final stage of clustering would result in a single group containing all cases.

The clustering process does not identify a single set of groups; rather, a hierarchical sequence of stages is produced which contains successively fewer groups with larger numbers of incumbents. It is the analyst's job, working with SMEs, to select points in the clustering process at which the number of groups is meaningfully minimized and the homogeneity of group membership is maximized. Substantive interpretation of these groups is accomplished by analyzing task rating data and descriptive statistics of the background variables (e.g., grade, series, major command, job type, etc.).

In summary, CODAP hierarchical clustering analyses will be run on all of the cases (i.e., incumbents' responses to the task inventory) to determine how they empirically cluster solely on the basis of task similarity. Degree of homogeneity/heterogeneity within groups and similarities across groups will be noted. Several alternative analyses which seem logical, feasible, and empirically defensible could also be conducted. For example, Wage-Grade and General-Schedule incumbent responses could be analyzed separately. These alternatives will be presented to the Army, along with their supporting evidence and rationale, for review and selection of a clustering scheme.

The second purpose of the CODAP analyses will be to determine the most critical tasks for each group identified. CODAP job descriptions (task profiles) contain four types of data: (1) percentage of group members performing the task, (2) average importance and time spent ratings given by those who perform the task, (3) average importance and time spent ratings across the group as a whole (including zero values for members not performing a particular task), and (4) the cumulative percentage of total rating points. Tasks can be rank ordered on the printout according to any of these four types of data.

Alternative decision rules for selecting the critical tasks (i.e., those tasks to which KSAOs will be linked in Task IV) will be explored with the Army. Heuristic rules are often employed to select the most critical of these rank ordered tasks. For example, Gandy, Rosen, Wall, Lilienthal, Crum, Carlyle, and Stern, (1983) defined more significant work tasks as those in the upper 50 percent of the cumulative group rating points which were performed by 50 percent or more of the incumbents.

The contextual factors ratings will be analyzed concurrently with the CODAP analyses. These data may prove useful in interpreting the job groups

produced by the CODAP hierarchical clustering analyses. The hierarchical clustering program will group cases based upon similarity of task response profile. Through an analysis of contextual factors, the extent to which these factors may account for differences in task performance can be determined. Using CODAP, groups of cases that vary only on a contextual factor can be selected, and the degree to which task performance varies can be assessed. For example, task performance profiles for supervisors in a manufacturing setting could be compared with those in a warehouse setting. Likewise, the task performance profiles of supervisors in positions which vary on the amount of interpersonal interaction that is required could be compared. Each of the clusters identified in the CODAP DIAGRAM output will be summarized in terms of the contextual factor responses. Frequencies, means, and the variance of these responses will be presented. In sum, job descriptions and analyses of contextual factors for each "type" of first-line supervisory position identified will be provided.

Draft Task III Report

Within two weeks after the conclusion of Task III, five copies of a draft technical report will be prepared for Army review. This report will document the events of Task III and will become part of the project documentation in the final report, pending Army approval.

Task IV: Identify the Knowledges, Skills, Abilities, and Other Characteristics (KSAOs) Required for the Selection of First-Line Supervisors

SMEs representing each of the job groups/clusters will meet in workshops to identify the KSAOs required for selection of first-line supervisors. To select a sample of SMEs for these workshops, a sampling procedure similar to the one described in Task II will be used. This procedure will ensure that the sample is representative of the population with respect to such factors as major command, grade, series or job family, etc. Additionally, to the extent possible, minority group members and women should be adequately represented in the workshops. Eight to ten SMEs from each cluster will participate in these workshops.

Task IV involves identifying KSAOs relevant for the selection of first-line supervisors and linking them to critical tasks. In Task II a refined KSAO list will have been developed. At this point workshops with SMEs will be conducted to review this list. Finally, during these workshops ratings will be obtained from SMEs to determine which KSAOs are most important for each critical task. Details of this process are presented below.

Review List of KSAOs

In Task II, a preliminary list of KSAOs was compiled by reviewing existing job-related materials (e.g., job descriptions, classification standards, qualification standards, training materials) and reviewing the

relevant literature. Additionally, the KSAOs were reviewed and refined in a series of SME workshops. The first step in Task IV will have SMEs review the list of KSAOs. The workshop leader and the SMEs will clarify terminology and operational definitions of the KSAOs. Also they will add KSAOs, as required.

Lead SME Groups to Identify Required KSAOs

After the SMEs have reviewed the KSAOs, two general sets of judgments are to be made in the SME workshops. First SMEs will make KSAO by Task ratings, then they will make KSAO ratings for the overall job. The proposed rating scales and the rationale for each will be discussed below. The task by KSAO ratings will be made before the overall job KSAO ratings to reduce the possibility of halo error. Specifically, if the overall ratings are made first, when subsequently asked to judge importance of KSAOs for individual tasks, SMEs often bias these ratings to be consistent with the overall rating. Also, since the SMEs will have reviewed all of the critical tasks, they will be better able to make an accurate overall rating. That is, having just rated all the critical tasks by each KSAO, the SME will be reminded of all the tasks that comprise the supervisory job.

KSAO by Task Rating

For this judgment, SMEs are asked to rate the importance of every KSAO for each critical task. A matrix will be presented with KSAOs on one axis and tasks on the other. The SMEs might be asked to make ratings on each task by KSAO combination using the following scale:

How important is this
KSAO for performing this
task effectively?

- 1 = Unimportant
- 2 = Minor importance
- 3 = Important
- 4 = Very Important
- 5 = Extremely Important

"Total" Job KSAO Ratings

The second set of ratings will be made on the KSAOs as they relate to the "total" job. These ratings will be used to identify KSAOs that are critical for the job. Three judgments are recommended for this set of ratings.

This rating asks how important each KSAO is for overall job performance.

How important is this KSAO for effective overall job performance?

- 1 = Unimportant
- 2 = Minor Importance
- 3 = Important
- 4 = Very Important
- 5 = Extremely Important

For selection, not only must a KSAO be important for performance, but it should also differentiate average from superior performers. Therefore, the next scale asks:

How important is possession of this KSAO for distinguishing average from superior performance on the job?

- 1 = Unimportant
- 2 = Minor importance
- 3 = Important
- 4 = Very Important
- 5 = Extremely Important

The third question is asked so that selection procedures will not be based upon KSAOs that are acquired during a brief orientation period. The Uniform Guidelines clearly state that such KSAOs are not permitted as selection/promotion criteria. That is, if a KSAO is normally acquired during a "brief orientation period", it should not be used as a basis for personnel decisions. This scale is stated as follows:

When is the necessary proficiency in this KSAO normally acquired?

- 1 = Prior to job entry
- 2 = During a brief orientation period (2-3 months) after entering the job
- 3 = Three months or more after job entry

Following these workshops, KSAO ratings for the total job and the KSAO by task ratings will be used to determine overall importance of the KSAOs for each first-line supervisory job "type" identified in the CODAP analyses.

Develop Final List of KSAOs For Selection

Two types of analyses will be performed on the SME rating data. First, intraclass correlations will be computed to assess the reliability of each set of panel ratings. High reliability suggests that the ratings have been conscientiously completed and that SMEs are in agreement regarding these importance judgments. Second, the rating data will be summarized in descriptive statistics. Specifically, means will be computed for each KSAO and task on each rating scale, resulting in the following data:

- (1) for each critical task, the average level of importance of every KSAO;
- (2) the average level of importance of each KSAO for overall job performance;
- (3) the average of each KSAO in terms of differentiating superior from average incumbents; and
- (4) a frequency distribution of when each KSAO is normally acquired.

Four ratings are proposed (KSAO by task importance, KSAO overall job importance, KSAO importance in differentiating superior from average performers, and when the KSAO is normally acquired) to identify KSAOs appropriate for selecting candidates for each supervisory job type. By integrating the results of all four types of ratings, sets of critical KSAOs that are comprehensive, job-related, and defensible can be identified. The details of this procedure are described below. Of the four types of ratings, the first three will be combined to form an overall KSAO importance index, while the fourth rating will serve as a hurdle.

The KSAO by Task ratings will be summed across tasks to provide an overall importance score for each KSAO. This score will take into consideration both the number of tasks for which a KSAO is required and its average importance.

A crucial rating is the KSAO's overall importance for effective job performance. The rating scale used to gather this information is similar to the KSAO by Task rating, except that the question is how important the KSAO is for the overall job as opposed to a particular job task. Both of these scales provide valuable information that will determine a KSAO's overall rating on the importance index. Ratings of KSAOs for the entire job are important because overall ratings take into consideration factors not sufficiently represented in any discrete task, (e.g., interpersonal and motivational aspects of performance, multiple demands, tasks not rated).

Although ratings of a KSAO's importance to overall job performance provide an excellent method for identifying KSAOs which should be considered as possible selection criteria, this index does not directly estimate the extent to which a KSAO differentiates superior from average job performers. Differentiating between levels of supervisor performance is the basic purpose of all selection procedures. Thus, including a rating of how well each KSAO can be expected to differentiate superior from average performers will provide important information about which KSAOs might be considered as selection criteria for first-line supervisory positions.

For each job type identified from the CODAP hierarchical clustering analysis, the KSAOs required for effective job performance will be identified. The judgments collected on the four rating scales described above will be used to determine these KSAOs. As a first step, judgments collected from the rating scale dealing with "when the KSAO is normally acquired" will be used as a hurdle. If a KSAO is normally acquired during a "brief orientation period" it cannot be used as a selection criteria. Any KSAO identified as typically being acquired during a brief period will be dropped from further consideration. For KSAOs that pass this hurdle, the judgments collected on each of the three remaining rating scales will be combined into a composite index. This index will be a weighted combination of three ratings:

- 1) KSAO importance to overall job performance,
- 2) Summed KSAO by task ratings of importance, and
- 3) Performance differentiation.

Because each of these contribute unique information, an index combining these three ratings would possess the most utility. Given that the objective is to identify criteria for selection into first-line supervisory positions, it may be desirable to weight performance differentiation scores more heavily than overall importance scores. The appropriateness of differential weighting will be discussed with the Army, the SAG and SMEs. Once a composite KSAO rating for these three factors has been obtained, mean ratings will be computed across SMEs for each KSAO. KSAOs will then be ranked on this composite index to identify the most important KSAOs for each cluster or job type.

Draft Task IV Report

Within two weeks after the completion of Task IV, a draft technical report will be provided for Army and SAG review. This report will document the events of Task IV and will become part of the project documentation in the final report, pending Army approval.

Task V: Final Report

Prepare Draft Final Report

Five copies of a draft final report will be submitted to the Army eleven (11) months after contract award. This report will describe all project activities. Specifically, the report will describe development and administration of the inventory, analyses of inventory survey responses, and identification of KSAOs required for selection to first-line supervisory positions. The report will also provide complete documentation of all project steps. Thus, it will serve as an audit trail for demonstrating the job-relatedness/content validity of the KSAOs defined in Task IV. As requested in the RFP, the report will be comprehensive and will demonstrate the adequacy of the job analysis to a third party not expert in the nature and purpose of occupational analysis.

Submit Final Report and Documentation

Comments on the draft final report will be incorporated into the final report and ten copies (including one unbound camera-ready copy) will be submitted to the Army. These materials will be submitted within 365 days after contract award.

Task VI: Meetings, Briefings, and Coordination

Kick-off Meeting

At the start of the project, project staff met with the SAG and Army representatives to discuss the project. The SAG can provide very useful information as to the different "types" of incumbents in supervisory positions, and where they can be found. In all stages of the project, these Army representatives will be invaluable in ensuring that the effort proceeds in the right direction.

Monthly Progress/Fiscal Reports

Each month two copies of a Progress/Fiscal Report will be submitted to the Army. The report shall contain the following:

- (a) A discussion of activities by each active task for the past month that includes a summary of any briefings, meetings, or visits including dates, places and participants.
- (b) An identification of products and/or milestones achieved.
- (c) Anticipated activity by task for the next month.
- (d) A description of any problems encountered or anticipated.
- (e) The amount of contract funds expended during the past month, for each task by each person the cumulative contract funds expended, the funds remaining under the contract, and forecast the probability of completing active tasks within estimated time and scope.

Brief Army Management (As Required)

Project staff will brief Army management (e.g., SAG), as required. The completion of each task might be an appropriate time for briefings or in-process reviews.

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THE IMPACT OF UNIT COHESION ON UNIT PERFORMANCE, MORALE, AND
ABILITY TO WITHSTAND STRESS: A FIELD EXERCISE EXAMPLE

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THE IMPACT OF UNIT COHESION ON UNIT PERFORMANCE, MORALE, AND
ABILITY TO WITHSTAND STRESS: A FIELD EXERCISE EXAMPLE

Guy L. Siebold and Dennis R. Kelly

INTRODUCTION. The purpose of this paper is to report on the relationships found between measures of cohesion obtained on 5 U.S. Army light infantry companies and the subsequent performance of those units on a 100 mile road march. This paper describes the measure of cohesion, the cohesion data collection, the road march, road march data collection, the relationships found, and conclusions reached.

COHESION. Cohesion is conceptualized as the structured pattern of social relationships between unit members, individually and collectively, necessary to achieve the unit's purpose. To be more specific, cohesion is conceptualized in terms of the bonding between first term soldiers (horizontal bonding), between first term soldiers and their leaders (vertical bonding), and between all the soldiers and their unit (organizational bonding) as in Siebold 1987a, Siebold and Kelly 1987, and Siebold 1987b. Based on this conceptualization, extensive interviews with soldiers, and past research, a questionnaire measure of cohesion was developed. This measure was subsequently refined into a brief 20 item questionnaire addressing the three types of bonding listed above. A copy is provided as Appendix A.

The 20 item questionnaire was administered along with the earlier developed long form of the questionnaire to 5 line companies and 2 headquarters companies from two battalions of the same light infantry brigade the week after Labor Day, September 1987. These companies had been in the field for about two weeks before Labor Day weekend. One week later, the 5 line companies discussed in this paper started the 100 mile road march with one company beginning the march each day. Each of the companies was a light infantry COHORT company. Four of the companies were formed in fall of 1986; one was formed in fall of 1985. The units had taken the long form of the questionnaire in January 1987. The September questionnaires were administered to each company separately in battalion classrooms by Army Research Institute and contractor (Advanced Technology, Inc.) personnel. The company commander and first sergeant of each company were also asked to rate the platoons in their company, using a 1 (low) to 10 (high) scale, on several factors including a platoon's ability to perform in the field, withstand stress, and morale.

ROAD MARCH. The road march exercise was designed by the brigade commander and staff. Its purpose was to challenge and evaluate the line companies with a special focus on leading, training, and caring for soldiers under arduous conditions. The march was divided into five segments or lanes of about twenty miles each. At the end of each lane, the company conducted an exercise or short mission. Each company completed one lane per day.

The evaluation system measured how well the company and its

leaders got the soldiers over the march route fit to fight. The evaluations covered four broad categories: medical/physical fitness, morale and attitude, tactical soundness, and mission accomplishment. The medical/physical fitness category concerned the extent to which there were soldiers who were stragglers or dropped out as well as those ruled as medically unable to continue. The morale and attitude category concerned the extent to which the chain of command maintained good cheer, a positive mission orientation, and discipline among the soldiers. The tactical soundness category covered everything from troop-leading procedures through field craft fundamentals (including sanitation), pace and load management, and route and assembly area security. Mission accomplishment concerned the extent to which a company accomplished the tactical mission exercise at the end of each lane.

An impartial officer from the brigade was in charge of each lane. He evaluated each company on the four categories as it passed through his lane. Thus each company was evaluated by the same five raters whose scores were added to obtain a total score for each of the four categories and an overall total evaluation score. The company with the highest overall score was considered the winner and scheduled to go to Wales, United Kingdom in 1988 on a special exercise as a reward.

RESULTS. The 20 item cohesion questionnaire has exhibited very good psychometric properties. The road march evaluations also appeared to have reasonable metric qualities, especially for a first usage. The 9 line companies (5 of which had taken the cohesion questionnaires earlier) from the brigade which took part in the exercise had total road march performance scores which separated out distinctly. The road march raters exhibited a good level of consensus in that the top companies and the lower performing companies were similarly rated across the lanes. In general, the various questionnaire and evaluation measurements appeared more than sufficient to warrant further analysis.

The cohesion scales within the 20 item instrument were correlated with the four category scores and total score for the 5 companies in the sample. The results are displayed in Table 1. Given that the number of cases is only 5 companies, the results must be considered only as suggestive. A much larger sample would be required to establish a firm confidence in the various correlations presented (cf. Oliver, 1987). Nevertheless, it is interesting to note both the general high level of correlations and the apparent dominance of the leadership related cohesion scales.

To put the Table 1 correlations in perspective, Table 2 is included and displays the correlations between the cohesion questionnaire scores, from the platoons of all 7 companies, and the assessments of their platoons by the (lower rating of) the company commander and first sergeant. Since there are a greater number of cases, 28 platoons, which underly these correlations in Table 2, one can be more confident of their level and

significance. The general pattern of ABILITY TO WITHSTAND STRESS correlations with the cohesion scales is similar to the pattern in the medical/physical fitness (MEDICAL) category column in Table 1. The general pattern of the MORALE correlations with the cohesion scales in Table 2 is not dis-similar to the pattern in the morale and attitude (MORALE) category column in Table 1. What is different is that the company level assessments emphasize first term bonding and teamwork while the road march results emphasize the contribution of leadership. This of course is understandable since the company level assessments were more wholistic while the road march exercise was designed specifically to challenge the skills of the leaders in the chain of command.

In summary, the results are presented in Figure 1. As the cohesion scores increase, the performance scores increase. The direct causal mechanisms are not yet identified but are the subject of ongoing research. The one company (number 4) where the performance scores do not increase noticeably with an increase in the cohesion score is a special anomaly. That particular company underperformed somewhat because a local event was attended by 60% of the company during lanes 1 and 2; they did not rejoin their company until lane 3.

CONCLUSIONS. From this brief presentation, one can reach several conclusions. First, cohesion does have a strong association with the performance of a unit. Second, cohesion is associated with a wide range of performances--medical related, morale and attitude, and mission performance. Third, different aspects of cohesion relate differentially to various kinds of unit performance. Finally, the high level of correlations, even if suggestive due to the small sample size, indicate the great value of further pursuing investigations into the cohesion-performance linkage so that cohesion building programs can be established where needed and strengthened where existing.

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Table 1
Correlations between Cohesion Scales and
Road March Performance Ratings

	MEDICAL MORALE		TACTICAL MISSION		TOTAL
VALUES	.61 .27	.72 .17	.68 .20	.95 .01	.84 .07
FIRST TERMER BONDING	.54 .34	.75 .14	.83 .07	.68 .20	.78 .11
FIRST TERMER TEAMWORK	.67 .21	.79 .10	.67 .21	.79 .11	.82 .08
LEADER BONDING	.62 .26	.80 .10	.92 .02	.93 .02	.92 .02
LEADER CARING	.45 .44	.56 .32	.55 .33	.89 .04	.71 .17
LEADER SKILL	.63 .25	.79 .10	.88 .04	.96 .01	.92 .02
RULE CLARITY	.71 .18	.80 .10	.74 .15	.97 .01	.91 .03
PRIDE	.67 .21	.80 .10	.78 .11	.96 .01	.91 .03
NEEDS	.62 .26	.76 .13	.76 .13	.92 .02	.87 .05
GOALS	.52 .37	.66 .22	.60 .28	.80 .10	.74 .15

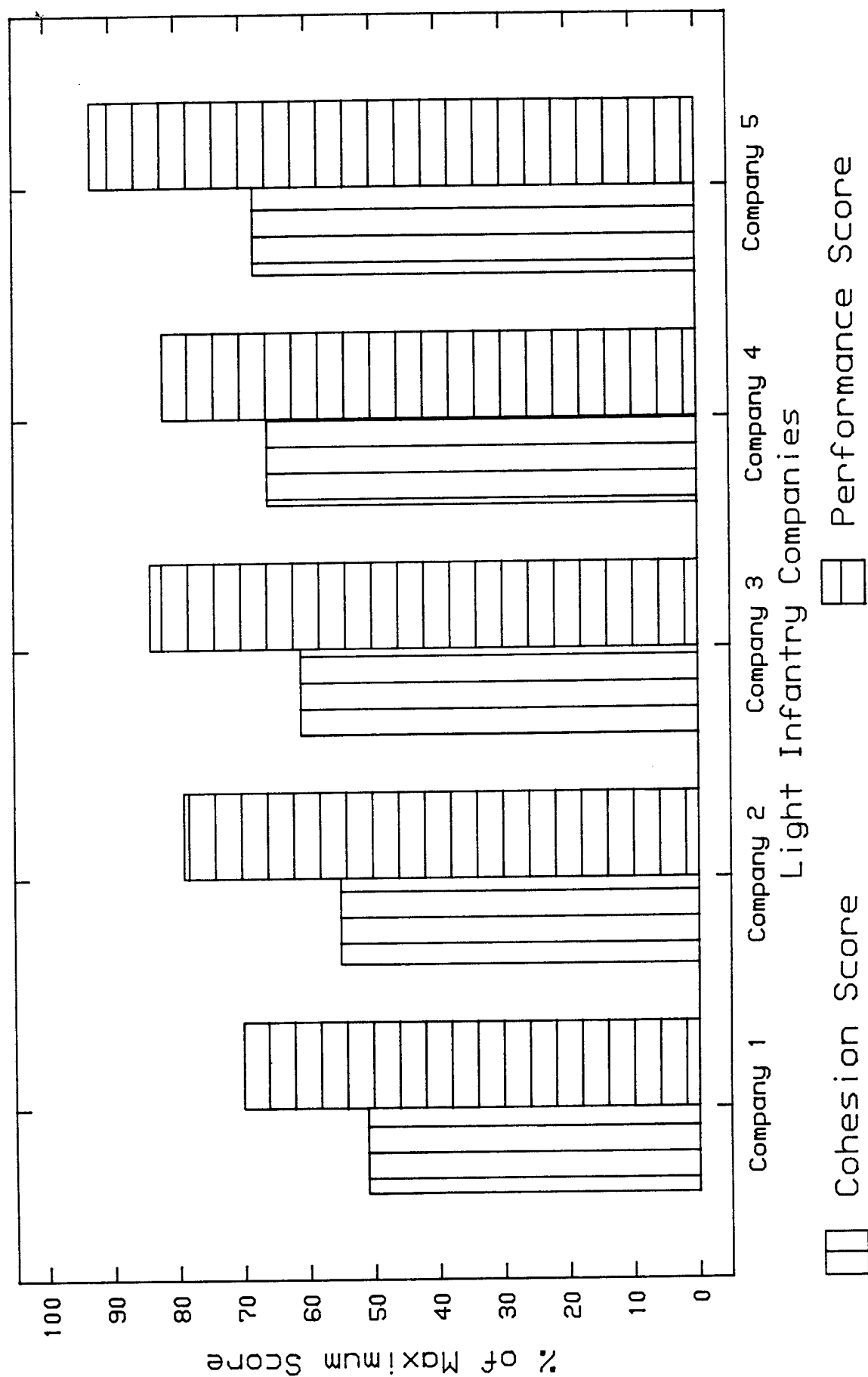
Note: The top number (**BOLD**) is the correlation coefficient and the bottom number is the significance level. N=5 Companies

Table 2
Correlations between Cohesion Scales and Company
Level Assessments of their Platoons

	ABILITY TO WITHSTAND STRESS	MORALE	PERFORMANCE IN THE FIELD
VALUES	.62 .0004	.45 .01	.52 .004
FIRST TERMER BONDING	.77 .0001	.61 .0005	.64 .0002
FIRST TERMER TEAMWORK	.75 .0001	.61 .0006	.69 .0001
LEADER BONDING	.59 .0009	.43 .02	.45 .01
LEADER CARING	.45 .02	.39 .08	.46 .01
LEADER SKILL	.55 .002	.44 .02	.54 .003
RULE CLARITY	.72 .0001	.58 .001	.56 .001
PRIDE	.50 .007	.25 .21	.58 .001
NEEDS	.55 .002	.47 .01	.49 .008
GOALS	.49 .008	.20 .30	.59 .0009

Note: The top number (**BOLD**) is the correlation coefficient and the bottom number is the significance level. N=28 Platoons

Figure 1. Cohesion and Road March Performance Scores :



APPENDIX A

PLATOON COHESION INDEX

Directions: This questionnaire is designed to help your Company Commander assess the general level of cohesiveness in your platoon. Fill in the information below and respond to each question by marking an "X" on the line which best represents your view. Your answers will be combined with the other soldiers in your platoon to get an overall picture.

Write In Your Platoon: _____
Company: _____

Check Your Pay Grade: E1-E4[]
E5-O2[]

1. First-termers in this platoon uphold and support Army values.

[+2] _____ A. Strongly Agree
[+1] _____ B. Agree
[0] _____ C. Borderline
[-1] _____ D. Disagree
[-2] _____ E. Strongly Disagree

2. Leaders in this platoon set the example for Army values.

[+2] _____ A. Strongly Agree
[+1] _____ B. Agree
[0] _____ C. Borderline
[-1] _____ D. Disagree
[-2] _____ E. Strongly Disagree

3. First-termers trust each other in this platoon.

[+2] _____ A. Strongly Agree
[+1] _____ B. Agree
[0] _____ C. Borderline
[-1] _____ D. Disagree
[-2] _____ E. Strongly Disagree

4. First-termers in this platoon care about each other.

[+2] _____ A. Strongly Agree
[+1] _____ B. Agree
[0] _____ C. Borderline
[-1] _____ D. Disagree
[-2] _____ E. Strongly Disagree

5. How well do first-termers in your platoon work together to get the job done?

[+2] _____ A. Very Well
[+1] _____ B. Well
[0] _____ C. Borderline
[-1] _____ D. Poorly
[-2] _____ E. Very Poorly

6. First-termers in this platoon pull together to perform as a team.

[+2] _____ A. Strongly Agree
[+1] _____ B. Agree
[0] _____ C. Borderline
[-1] _____ D. Disagree
[-2] _____ E. Strongly Disagree

7. Leaders in this platoon trust each other.

[+2] _____ A. Strongly Agree
[+1] _____ B. Agree
[0] _____ C. Borderline
[-1] _____ D. Disagree
[-2] _____ E. Strongly Disagree

8. Leaders in this platoon care about each other.

[+2] _____ A. Strongly Agree
[+1] _____ B. Agree
[0] _____ C. Borderline
[-1] _____ D. Disagree
[-2] _____ E. Strongly Disagree

9. First-termers in this platoon can get help from their leaders on personal problems.

[+2] _____ A. Strongly Agree
[+1] _____ B. Agree
[0] _____ C. Borderline
[-1] _____ D. Disagree
[-2] _____ E. Strongly Disagree

10. Leaders and first-termers in this platoon care about one another.

[+2] _____ A. Strongly Agree
[+1] _____ B. Agree
[0] _____ C. Borderline
[-1] _____ D. Disagree
[-2] _____ E. Strongly Disagree

11. Leaders and first-termers in this platoon train well together.
[+2] ☐ A. Strongly Agree
[+1] ☐ B. Agree
[0] ☐ C. Borderline
[-1] ☐ D. Disagree
[-2] ☐ E. Strongly Disagree
12. Leaders in this platoon have the skills and abilities to lead first-termers into combat.
[+2] ☐ A. Strongly Agree
[+1] ☐ B. Agree
[0] ☐ C. Borderline
[-1] ☐ D. Disagree
[-2] ☐ E. Strongly Disagree
13. First-termers in this platoon know what is expected of them.
[+2] ☐ A. Strongly Agree
[+1] ☐ B. Agree
[0] ☐ C. Borderline
[-1] ☐ D. Disagree
[-2] ☐ E. Strongly Disagree
14. In this platoon the behaviors that will get you in trouble are well known.
[+2] ☐ A. Strongly Agree
[+1] ☐ B. Agree
[0] ☐ C. Borderline
[-1] ☐ D. Disagree
[-2] ☐ E. Strongly Disagree
15. First-termers in this platoon feel they play an important part in accomplishing the unit's mission.
[+2] ☐ A. Strongly Agree
[+1] ☐ B. Agree
[0] ☐ C. Borderline
[-1] ☐ D. Disagree
[-2] ☐ E. Strongly Disagree
16. First-termers are proud to be members of this platoon.
[+2] ☐ A. Strongly Agree
[+1] ☐ B. Agree
[0] ☐ C. Borderline
[-1] ☐ D. Disagree
[-2] ☐ E. Strongly Disagree
17. How satisfied are the first-termers in this platoon with the time available for family, friends and personal needs?
[+2] ☐ A. Very Satisfied
[+1] ☐ B. Slightly Satisfied
[0] ☐ C. Borderline
[-1] ☐ D. Slightly Dissatisfied
[-2] ☐ E. Very Dissatisfied
18. How satisfied are the first-termers in this platoon with the unit social events?
[+2] ☐ A. Very Satisfied
[+1] ☐ B. Slightly Satisfied
[0] ☐ C. Borderline
[-1] ☐ D. Slightly Dissatisfied
[-2] ☐ E. Very Dissatisfied
19. First-termers in this platoon feel they are serving their country.
[+2] ☐ A. Strongly Agree
[+1] ☐ B. Agree
[0] ☐ C. Borderline
[-1] ☐ D. Disagree
[-2] ☐ E. Strongly Disagree
20. First-termers in this platoon have opportunities to better themselves.
[+2] ☐ A. Strongly Agree
[+1] ☐ B. Agree
[0] ☐ C. Borderline
[-1] ☐ D. Disagree
[-2] ☐ E. Strongly Disagree

Leadership and Management Technical Area Working Paper

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LEADER REQUIREMENTS RESEARCH: CURRENT STATUS

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PA 8800

LEADER REQUIREMENTS RESEARCH: CURRENT STATUS

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Leader Requirements Research: Current Status

Overview

The purpose of this paper is to document the status of the Leader Requirements research and related publications to date. The Leader Requirements research is designed to identify the leadership portion of the job for commissioned and noncommissioned officers. The methodology involves a leadership task analysis instrument --The Leader Requirements Survey--developed from extensive interviews with commissioned and noncommissioned officers.

The Leader Requirements Survey was conducted April through November 1987. Currently the data are being analyzed, and it is expected that the final results will be available before the end of FY 88.

Four publications are available which partially document the Leader Requirements research to date. The first, available through DTIC, is an ARI Research Product which contains the commissioned and noncommissioned officer forms of the Leader Requirements Survey, answer booklets, and instructions (Steinberg, 1987). The remaining three documents are conference papers included as appendices to this report because they are not readily available elsewhere. Below is a short description of each of these conference papers.

Appendix A contains a paper by Steinberg (May 1987) presented at the Sixth International Air Force Occupational Analyst Workshop. It was written for a military audience that is very familiar with the traditional task analyses for technical jobs. The purpose of this paper was to introduce the Army's task analyses for the leadership portion of the job, the Leader Requirements Survey. The body of the paper is written in question-and-answer format, with the questions being those most frequently asked about the Leader Requirements Survey. These include why a leadership task analysis was needed, how and by whom it would be used, why existing task lists were not used, why behaviors rather than competencies were stressed, and how one approaches developing tasks for a non-technical, often ambiguous area such as leadership.

The conference paper in Appendix B (Steinberg, van Rijn, & Hunter, 1986) discusses some of the ways the traditional task analytic approach was adapted to be more suitable for the Leader Requirements research. Topics included are: delineation of the leadership portion of the job, duty headings, task structure, task format, task specificity, task overlap, and task balance.

The last conference paper is Steinberg and Leaman, 1987 (see Appendix C). It contains some preliminary data analyses from the commissioned officer form of the Leader Requirements Survey. The data analyses addresses the technical/conceptual/interpersonal model of leaders' jobs as a function of organizational level.

When the analyses of the data from both the commissioned and noncommissioned officer forms of the Leader Requirements Survey are completed, a final ARI report will be written which documents the project. At a minimum it will include the methodology used to develop the Leader Requirements Survey, respondent demographics, and the significant leadership tasks by rank.

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- Steinberg, A. G., & Leaman, J. A. (1987, October). The Army leader requirements task analysis. Presented at the 29th Annual Military Testing Association Conference, Ottawa, Canada.
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USING TASK ANALYSIS TO IDENTIFY ARMY LEADER JOB REQUIREMENTS

Alma G. Steinberg

Presented at the Sixth International Air Force Occupational Analyst Workshop, 7 May 1987, San Antonio, Texas.

Using Task Analysis to Identify Army Leader Job Requirements¹

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Leadership is one of the seven major goals of the U.S. Army. Army Regulation 600-100 entitled "Army Leadership" establishes leadership policies for the Army and states that "an integrated, progressive, and sequential program of leadership training and education will be implemented in the Army school system" (Headquarters, Department of the Army, 1986).

The Army currently has in place a multi-level education and training system directed at enhancing commissioned and noncommissioned officer leadership skills and performance at each successive level. (See Table 1 for a quick glance at the Noncommissioned Officer Education System in which the Army trains over 157,000 enlisted soldiers in leadership each year.) Yet the Army lacks an empirical basis for ensuring that its leadership training program reflects the progressive and sequential nature of Army leader requirements. Although there has been much theorizing about the nature of Army leadership, and even some isolated data collected on leader job requirements, no current, systematic, Army-wide delineation of Army leadership job requirements by level for commissioned and noncommissioned officers exists.

In order to address this problem, the U.S. Army Research Institute (ARI), with the assistance of the Occupational Survey Division, U.S. Army Soldier Support Center - National Capital Region (SSC-NCR), is conducting a task analysis of the leadership portion of commissioned and noncommissioned officer jobs. A Leader Requirements Survey has been developed and is currently being administered in the field. It was designed to identify the leadership portion of the job, by level and by branch, for Sergeant (E5) through Command Sergeant Major (E9) and Second Lieutenant (O1) through Colonel (O6). The purpose of this paper is to discuss some issues that were taken into account in the design of the Leader Requirements Survey.

In designing and conducting this task analysis of Army leadership, particular attention was paid to two major considerations. The first was why a leadership task analysis

The views expressed in this paper are those of the author and do not necessarily reflect the views of the U.S. Army Research Institute or the Department of the Army.

Table 1.

Noncommissioned Officer Education System

Course	Grade	Number of students per year*
Primary Leadership Development Course (PLDC)	E4, E5	81,600
Basic Noncommissioned Officer Course (BNCOC)	E6	50,500
Advanced Noncommissioned Officer Course (ANCOC)	E6, E7	21,500
First Sergeants Course	E7, E8	3,196
Sergeants Major Course	E8, E9	650
TOTAL		<u>157,446</u>

*Number of students includes: Active Army, Reserves,
National Guard, and both resident and nonresident students.

should be conducted, in the first place. In other words, was it really needed and if so, how would it be used? The second major consideration dealt with how task analytic procedures could be applied successfully to the arena of leadership. Below is a discussion of these two considerations.

An Army Leader Requirements Task Analysis: Why?

The Leader Requirements Task Analysis is being conducted for the Center for Army Leadership (CAL) and the U.S. Army Sergeants Major Academy (USASMA), the Army's proponents for leadership and the developers of Army leadership curricula. These two sponsors requested the task analysis because on the one hand they are responsible for ensuring that the multi-level leadership education and training program is integrated, progressive and sequential, yet on the other hand, they do not have the empirical data for making it so. The sponsors have indicated that they will use the information from the task analysis as an empirical basis for:

(a) Developing a blueprint for leadership development programs that takes into account how leadership tasks change from level to level in the Army.

(b) Determining needed instructional areas not presently addressed, and the levels for which they may be appropriate.

(c) Identifying and addressing similarities and differences in leadership training requirements for different branches.

(d) Determining appropriate time allotted to blocks of leadership instruction.

(e) Identifying possible discrepancies between leadership doctrine and what leaders actually do.

Thus, from the sponsors' perspective, the need for the task analysis is clear and its utilization is planned. Yet, this discussion of need and intent to use would not be complete without addressing the following related questions frequently asked by individuals when this project is first introduced to them:

Don't we already know everything we need to know about leadership?

This question assumes that leadership is merely a general, static concept or construct that would be the same irrespective

of context. This is not so. Leadership roles and job requirements vary greatly depending on context (e.g., organizational and environmental factors). In order to train soldiers to be effective leaders, we must know what their leadership job requirements are.

Doesn't the Army already know what its leader job requirements are?

What is known about the leadership portion of the job is primarily based on personal experience, hearsay, theory, and numerous personal opinion essays and not on systematically collected data, Army-wide. There are a few scattered empirical attempts to conduct Army leadership task analyses, but they cover limited segments of the Army (e.g., Hebein, Kaplan, Miller, Olmstead, & Sharon, 1984).

Doesn't the Army collect information on leader job requirements in its occupational surveys?

Although task analyses of the technical portion of the job are routinely conducted for the Training and Doctrine Command (TRADOC) by SSC-NCR, the Army has no system currently in place which conducts task analyses focused on the leadership portion of the job of commissioned and noncommissioned officers for its sequential leadership training program.

Why did you develop your own task analysis? Couldn't you have used some existing task list?

Again, this question implies that leadership is generic and therefore the same for all jobs. As was found in our current task analysis, this is not so. We started out by making no assumptions about what leaders do; the task list was built from scratch, based on iterative interviews with many incumbents. The resulting leadership task list is clearly Army. Here are some examples which illustrate the point. The tasks are relevant to the Army, but would not, for example, be likely to be found on a typical civilian leadership task list.

- Issue warning orders
- Conduct hip-pocket training
- Conduct memorial services for the unit's dead
- Inspect immediate subordinates' living quarters

Why do you need to do such an extensive, Army-wide leadership task analysis across 11 ranks and 18 branches?

Not only is the leadership portion of the job not the same across contexts of time, environment, and organizations, it is also not the same across organizational levels. Intuitively, we suspect that the leadership demands at the lowest level are not the same as those at the top level. How it changes from level to level is an empirical question which can be answered by a task analysis. Whether it changes or not across Army branches is also an empirical question to be answered by a task analysis. The answer to both these questions is important in designing a sequential and progressive leadership development program.

If leadership differs by organizational level, why use the same task list for all levels?

The same task list provides a common framework for comparison purposes. It allows comparison of the leadership portion of the job for commissioned and noncommissioned officers, across 11 ranks and all branches. This information can then be the basis of an integrated sequential and progressive leader development program.

Why not concentrate on leader competencies rather than leadership tasks?

Competencies selected for development of leaders should be based on what the job requires, not on some commonly accepted generalities about leadership. Our focus is to isolate the "do" portion of the leadership job, which can then be used as a basis for determining what leaders must be and know. In this way, the development of competencies such as communication, decision-making, planning, etc. can be targeted to task scope and complexity, and put in the context of when, how, and to what they need to be applied.

Also, as part of leadership training, it is important to communicate leader role requirements. In preparing soldiers for the next higher organizational level, it is helpful to provide them with realistic expectations of the job and let them know how the leadership requirements of the job are likely to differ, especially with respect to focus and level of complexity.

Wouldn't it be better to concentrate on leader effectiveness rather than on leader tasks?

Leader effectiveness implies effectively carrying out leader tasks. Thus, first one must determine the significant

leadership tasks required by the job, and then develop measures of effectiveness.

Would the results of the leadership task analysis really be used?

It is too early to be sure, but utilization has been the focus from the very beginning. The sponsors have been actively involved in all parts of the project and are currently making plans for the utilization of results.

An Army Leader Requirements Task Analysis: How?

Leadership differs from the technical portion of the job in ways that make it hard to apply traditional task analysis procedures directly to it. The domain is difficult to define and separate out; many leadership tasks are unobservable and overlapping; and a complete list of leadership tasks (especially for such a diverse group of jobs as those of all Army noncommissioned officers and commissioned officers through the rank of colonel) would be impossibly long. In the sections below the problems that arise in adapting the task analysis approach to leadership are discussed and the solutions we used are presented.

How does one develop a leadership task list when there is no agreement on what leadership is?

Because there are many different versions of what leadership is (e.g., Bass, 1981; Pfeffer, 1977; Washburn, 1985; Yoos, 1985), an agreed-upon definition of military leadership had to be established prior to beginning the development of the task list. The definition employed (suggested by the sponsors) was the official definition of military leadership: "a process by which a soldier influences others to accomplish the mission" (Headquarters, Department of the Army, 1983, p. 44). Thus, during the task-list development interviews, incumbents were asked to "tell us what do you do to influence others to accomplish the mission." Only tasks which fit this definition of military leadership were retained in the final task list.

How can you address leadership tasks that are not always observable and/or have no definite beginning or end?

Although the leadership tasks included in the task list conformed to typical task requirements of a verb, an object, and as needed, a qualifying phrase for clarity (Melching & Borchert, 1973), they did not necessarily always conform to two other typical requirements: observable behaviors and "a discrete unit of work performed by an individual [with] a definite beginning and ending...performed within a limited

period of time" (Melching & Borchert, 1973, p. 3). Had those criteria been conformed to, critical Army leadership tasks such as the following would have been omitted:

- Motivate troops to close with the enemy
- Demonstrate Army values
- Coordinate with other U.S. military services
- Monitor troop appearance

These statements are included in the task list because soldiers say they do them as part of "influencing others to accomplish the mission." Although they can be broken down further into task statements of observable behaviors with a clear beginning and end, the resulting task list would be endless. Since there is no one course of action or procedure to accomplish them that is correct or that necessarily ensures success in all cases, it would be hard to obtain agreement on any subset of tasks (Tarr, 1985).

How can you write leadership tasks that are distinctly separate from one another (i.e., non-overlapping)?

The answer to this one is that you can't. Leadership tasks are not always distinct from one another nor, is it always clear which tasks are subtasks of others. For example, using two tasks listed above, if you "motivate troops to close with the enemy," you may need to "demonstrate Army values" to do it, and thus the latter task may appear to be a subtask of the former. Yet the reverse may be true also. If you "demonstrate Army values," one of the things you may do is "motivate troops to close with the enemy."

If the relationship between leadership tasks is so ambiguous, how do you organize them into duty areas?

The traditional use of single-word duty titles (such as communicating, counseling, or motivating) to group tasks adds to the problem of organizing tasks because of overlap. A leader could be communicating, counseling, and motivating all at the same time. Our solution to reduce ambiguity was to make duty titles in the same format as task statements.

Conclusion

In conclusion, we have addressed the questions: Is an Army task analysis needed, and if so, can it be done. Determining the specific need for the task analysis in the very beginning of the developmental process provided the focus for

the endeavor and the foundation for planning utilization. Addressing the problems associated with looking at the leadership portion of the job with a typical task analysis approach resulted in adaptations of the task analysis approach which, while not traditional, enabled it to be applied to leadership.

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LEADER REQUIREMENTS TASK ANALYSIS

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4 NOVEMBER 1986, MYSTIC, CONNECTICUT.

LEADER REQUIREMENTS TASK ANALYSIS¹

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The U.S. Army Research Institute (ARI) is conducting research to assist the Center for Army Leadership (CAL) and the U.S. Army Sergeants Major Academy (USASMA) in designing and maintaining a sequential and progressive leadership development program for commissioned and noncommissioned officers. This research will provide current, Army-wide data about the leadership tasks required of NCOs (E5 through E9) and officers (O1 through O6); and the tools and methodology to update this information, as necessary, in the future. It will provide CAL and USASMA with an empirical basis for:

- (a) designing leadership development programs that take into account how leadership tasks change from level to level in the Army.
- (b) determining needed instructional areas not presently addressed, and the levels for which they may be appropriate.
- (c) identifying and addressing similarities and differences in leadership training requirements for different branches of the Army.
- (d) determining the appropriate time to be allotted to blocks of leadership instruction.
- (e) identifying possible discrepancies between leadership doctrine and what leaders actually do.

The basic approach of this research is an occupational task analysis survey, specially adapted for application to the area of leadership. The task analysis survey approach is especially advantageous because it provides the requisite information in a standardized format suitable for comparisons across groups (e.g., ranks and branches) and can be administered Army-wide. It conforms with format requirements of the Army Occupational Survey Program (AOSP) and provides the Army with a viable avenue to update leader requirements information in the future, as needed. The procedures used to develop the task inventory and the special adaptations for the area of leadership are described below.

¹The views expressed in this paper are those of the authors and do not necessarily reflect the views of the U.S. Army Research Institute or the Department of the Army.

Procedures for Developing the Leadership Task Inventory

There are two main approaches to developing task inventories (McCormick, 1979). One approach relies on the existing literature - military, non-military, empirical and/or theoretical - to build the inventory (e.g., Clement & Ayres, 1976). The other approach relies on interviews with job incumbents about the tasks they perform. The latter approach was selected for this research as being the one that would most closely meet the requirement to document the leadership tasks that NCOs and officers perform in today's Army.

Small-group interviews (usually about 6 to a group, but sometimes as many as 15 or more) were conducted with several hundred NCOs and officers at a variety of locations including Ft. Hood, Ft. Campbell, Ft. Belvoir, Ft. Carson, Ft. Polk, Ft. Bliss, Ft. Lee, and Ft. Eustis. The interview sessions were approximately 1 1/2 hours in length and focused on present, and sometimes previous, jobs of the incumbents. Interviewees also were asked to indicate the similarities and differences between the leadership portion of their own jobs and the jobs of: (a) soldiers at the same rank in other branches, and (b) soldiers one rank higher and lower than themselves. The task inventory was both developed and reviewed in an iterative process over the course of the interviews. Interviewees were asked to describe what they did in their jobs and then to review the leadership tasks developed from earlier sessions with other incumbents. They were asked also to comment on some tasks derived from other sources, such as instructors in the schoolhouse, retired military personnel, leadership literature and doctrine, instruction manuals, and other task lists.

With each set of interviews, new tasks were added to the preliminary task inventory, existing tasks were clarified, and tasks in similar topic areas were grouped. Headings were selected to reflect the nature of the tasks in each group or duty area.

The completed task list then was reviewed by subject-matter experts (SMEs) at CAL and USASMA to ensure that it was clear, accurate, and complete. Recommendations from these experts guided the final consolidation of the task inventory prior to ARI's internal review.

Special Adaptations for the Area of Leadership

The following discussion highlights some of the ways the traditional task analytic approach was adapted in the current research effort to be more suitable for use in the leadership domain.

Delineation of the leadership portion of the job

In traditional technical task analysis, incumbents have relatively little trouble identifying the technical tasks they do. Identifying the leadership tasks is much more problematic because they are intertwined with the technical tasks and because many different perspectives exist on the boundaries of the leadership domain (Bass, 1981). Thus, the definition of leadership in the Army's field manual on military leadership (FM 22-100, Headquarters Department of the Army, 1983) was used for clarification. Military leadership, as defined in the manual, is "a process by which a soldier influences others to accomplish the mission" (p. 44).

Duty headings

A frequent format for headings of duty areas (groups of similar tasks) is a single word or concept. In the leadership arena this format makes it difficult to determine the appropriate grouping of tasks into duty areas. For example, the Air Force leadership survey conducted in May 1983 (Occupational Survey Branch) contains a duty area heading titled "communicating." Since other duty areas in the survey definitely involve communicating (counseling, maintaining discipline, motivating, training, etc.), it is not apparent what the duty heading "communicating" means. The approach taken in the current survey was to eliminate some of the ambiguity of duty headings by putting them into the same format as task statements. Although this approach does not eliminate all the ambiguity, it communicates the intent of a grouping better (e.g., "maintain 2-way information exchange with superiors").

Task structure

The task statements in the present inventory are constructed as follows: a verb, an object, and, if appropriate, a modifier. Multiple verbs as in the task "OPERATING INSTRUCTIONS, implement and issue" (American Institutes for Research, 1975, p. 18) are avoided. Respondents who only do one of these (implement or issue) find it difficult to respond to these tasks.

Task format

Traditional Army occupational job analyses consist of behavioral tasks which state what individuals actually do while performing a task. The tasks are discrete units of work that have discernible beginnings and endings (McCormick, 1979). Two examples of military leadership tasks which follow this format are: "conduct briefings" and "make on-the-spot corrections."

In order to cover the domain of leadership adequately, however, it is necessary to supplement these behavioral tasks with what Fleishman calls "the behavior requirements approach" (Fleishman, 1982, p. 827). This approach allows reference to inferred processes which may intervene between stimulus events and responses, and includes tasks that are less likely to have a clear, observable beginning and end. Examples of such military leadership tasks are "motivate troops to close with the enemy" and "assess the climate of the unit."

In the leadership area, the distinction between behavioral tasks and behavioral requirements is often blurred. For example, the task "evaluate group performance" may be either. It may be observable with a clear beginning and end on some occasions and not so on others. An example of the former case is the leader visibly timing the group on how long it takes to complete a specific training exercise. An example of the latter case is the leader casually observing the group's performance and making mental notes on the quality of performance.

Task specificity/generality

Although it is frequently recommended that the same level of task specificity be maintained throughout a task inventory, and that the level be not too general and not too specific (Fleishman, 1982), the leader requirements inventory was designed with tasks which vary from general to specific. This practice was followed in order to focus on those aspects of leadership which SMEs hypothesize differentiate leadership tasks of various sub-groups (line and staff, branches, etc.) and various levels within the organization. At the broad end of the spectrum are tasks such as "motivate subordinates" and "delegate decision-making to subordinates." At the other end of the spectrum are much more specific tasks such as "set up command post" and "conduct court martial proceedings."

Another reason for the generality of some of the tasks is the objective of targeting the leadership process rather than the technical portion of the job. For example, generic words such as "vehicles" replace specific categories of military vehicles in order to discover whether the leadership process is the same across different jobs and different ranks.

Task overlap

As a consequence of the varied levels of specificity discussed above and also the nature of leadership, it is not possible to cover the domain of leadership adequately without including tasks that overlap. For example, the task

"supervise soldiers" could be said to encompass many other more specific tasks (e.g., "motivate soldiers who have attitude problems"), but the inclusion of this general task enables the determination of who supervises soldiers and who does not at a single glance. Note that this motivation task also could be performed by soldiers who do not supervise other soldiers.

On the other hand, another sort of overlap is strictly excluded. The following three tasks are an illustration of the type of overlap that is repetitive, pointless, and confusing (American Institutes for Research, 1976, p. 79):

- (a) SUBORDINATES, evaluate
- (b) SUBORDINATES, interview, consult and counsel
- (c) SUBORDINATES, motivate, evaluate and counsel

Task balance

Due to the broad scope of the jobs to be included, it was impossible to keep the inventory to a reasonable length and yet at the same time include all alternative tasks in the domain. Only when the alternative tasks were clearly needed for comparison purposes were they included. Examples of balanced tasks are "motivate subordinates" and "motivate superiors." (Had there been no value in distinguishing who was to be motivated, the task could simply have read "motivate others.")

Conclusion

The Leader Requirements survey is scheduled to be distributed early in 1987. It is anticipated that, in addition to providing empirical data on leader requirements Army-wide and a methodology for updating this data, it will provide (a) a methodology for leadership task analysis that can be applied in other organizational settings and (b) an empirical basis for examining leadership theories which address the leader's role as a function of organizational level. In the leadership area there has been much conjecture and relatively little supporting data.

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THE ARMY LEADER REQUIREMENTS TASK ANALYSIS

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THE ARMY LEADER REQUIREMENTS TASK ANALYSIS¹

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Background

The purpose of this paper is to present and illustrate the approach of the Army Leader Requirements Survey to examine the leadership portion of the job of commissioned and noncommissioned Army officers. The survey and its purpose will be introduced, followed by an illustration of the richness of information that can be provided from this approach.

The Leader Requirements Survey is a task analysis that addresses the leadership portion of the job of Army commissioned and noncommissioned officers. It was conducted by the U.S. Army Research Institute, with the assistance of the Army Occupational Survey Program (AOSP), in order to provide the Army's proponents for leadership and developers of the Army's leadership curricula with empirical data on which to: (a) refine its multi-level leadership education and training programs, (b) ensure that these programs are integrated for commissioned and noncommissioned officers, and (c) ensure that these programs adequately represent the progressive and sequential nature of Army leader requirements.

The Leader Requirements Survey was administered Army-wide to commissioned officers in ranks Second Lieutenant through Colonel and noncommissioned officers in ranks Sergeant through Command Sergeant Major. Two survey distribution methods were used, direct mail for the commissioned officers and installation distribution for the noncommissioned officers. Since the direct mail method took less time, the commissioned officer data were ready for analysis first and were used as the basis for the discussion in this paper (n = 5033).

The survey consisted of three parts (see Steinberg, 1987 for a complete description of the survey). Part I was the Background Information Section that is routinely administered to respondents of AOSP surveys. It was

¹The views expressed in this paper are those of the authors and do not necessarily reflect the views of the U.S. Army Research Institute or the Department of the Army.

preprinted in the answer booklet and included questions such as rank, level of education (military and civilian), type of unit, and location. Part II of the survey consisted of a list of 560 leadership tasks divided into 20 duty areas. Respondents were instructed to rate only those tasks they perform (in their current duty assignment) on a 7-point "Significant Part of the Job" scale. Part III, the Duty Position Requirements section, contained multiple-choice questions which provided additional information on the leadership portion of incumbents' jobs. Questions included: (a) additional background information relevant for examining the leadership portion of the job (e.g., supervisory, combat, commander), (b) importance of various knowledges and abilities, and (c) selected items to provide a basis for examining some popular assumptions about, and models of, leader requirements. In order to illustrate the richness of information that can be obtained from this type of survey, over and beyond that from traditional task analyses, one such model of the technical, conceptual, and interpersonal nature of leadership positions as a function of organizational level will be the focus of this paper.

The Technical/Conceptual/Interpersonal Model

A widely held assumption about the nature of leadership positions is that the percents of technical, conceptual, and interpersonal tasks and skill requirements associated with leader positions change as a function of organizational level (e.g., Katz, 1974; Guglielmino & Carroll, 1979; Owens 1982). The general notion is that the lower the level of the leader's position, the more technical tasks are required; the higher the level of the leader's position, the more conceptual tasks are required. The percent of interpersonal tasks and skills is said by some to remain roughly the same, regardless of organizational level (e.g., Guglielmino & Carroll, 1979; Headquarters Department of the Army, 1987) or increase at higher organizational levels (Owens, 1982).

This technical/conceptual/interpersonal model is often asserted to hold true across organizations despite the lack of supporting evidence. This may be due, in part, to the wide publicity the model has received. For example, Katz's original 1955 article, citing only anecdotal evidence, was reprinted in 1974. Within the first 6 months, nearly 4,000 reprints were sold!

Survey Results

The Leader Requirements Survey contained three questions bearing on the technical/conceptual/interpersonal model directly. Incumbents were asked to indicate the percent of their jobs involved doing tasks that are: (a) technical, (b)

conceptual (related to ideas and information), and (c) interpersonal (related to people).

For the technical part of the job, an analysis of variance indicated a significant rank effect, $F(5, 4777) = 24.58$, $p < .001$. The Scheffe multiple-comparison procedure indicated that ranks second lieutenant, first lieutenant, captain, and major form one group (i.e., have mean responses which do not differ significantly from one another) and lieutenant colonel and colonel form another group. Figure 1 illustrates why this is so. Although the ranks responded approximately equally in the middle range of responses, more lieutenant colonels and colonels responded in the 0 to 20% range and fewer responded in the 81% to 100% range.

In spite of these rank differences, there are some departures from the model. Regardless of rank (i.e., organizational level) the responses of the officers are distributed across the entire range, from 0% to 100%. No one percent represents an entire organizational level, as suggested by the model. (Note that this pattern holds true for the conceptual and interpersonal parts of the job, as well.) Also, at the lower end of the organization, more than one third of second lieutenants and first lieutenants report that less than 21% of their job involves technical tasks, and at the higher end of the organization, almost one fourth of the lieutenant colonels and colonels report that more than 41% of their job involves technical tasks.

For the conceptual part of the job, the analysis of variance also indicated a significant rank effect, $F(5, 4777) = 6.03$, $p < .001$. The Scheffe multiple-comparison procedure indicated that all ranks were similar with respect to the conceptual part of the job, except for captains. Captains were in a separate group from second lieutenants, lieutenant colonels, and colonels, that is, significantly more of the captains' job involved conceptual tasks. This is another departure from the model.

Finally, for the interpersonal part of the job, the analysis of variance once again indicated a significant rank effect, $F(5, 4777) = 9.93$, $p < .001$. The Scheffe procedure indicated that majors (who as a group report a lower percent of the job involving interpersonal tasks than any of the other ranks) are in a separate group from second lieutenants, first lieutenants, captains, and colonels. Also, the first lieutenants report the highest percentage of interpersonal tasks and are significantly different from the lieutenant colonels (as well as the majors). Once again there is a departure from the model.

PERCENT OF JOB - TECHNICAL TASKS

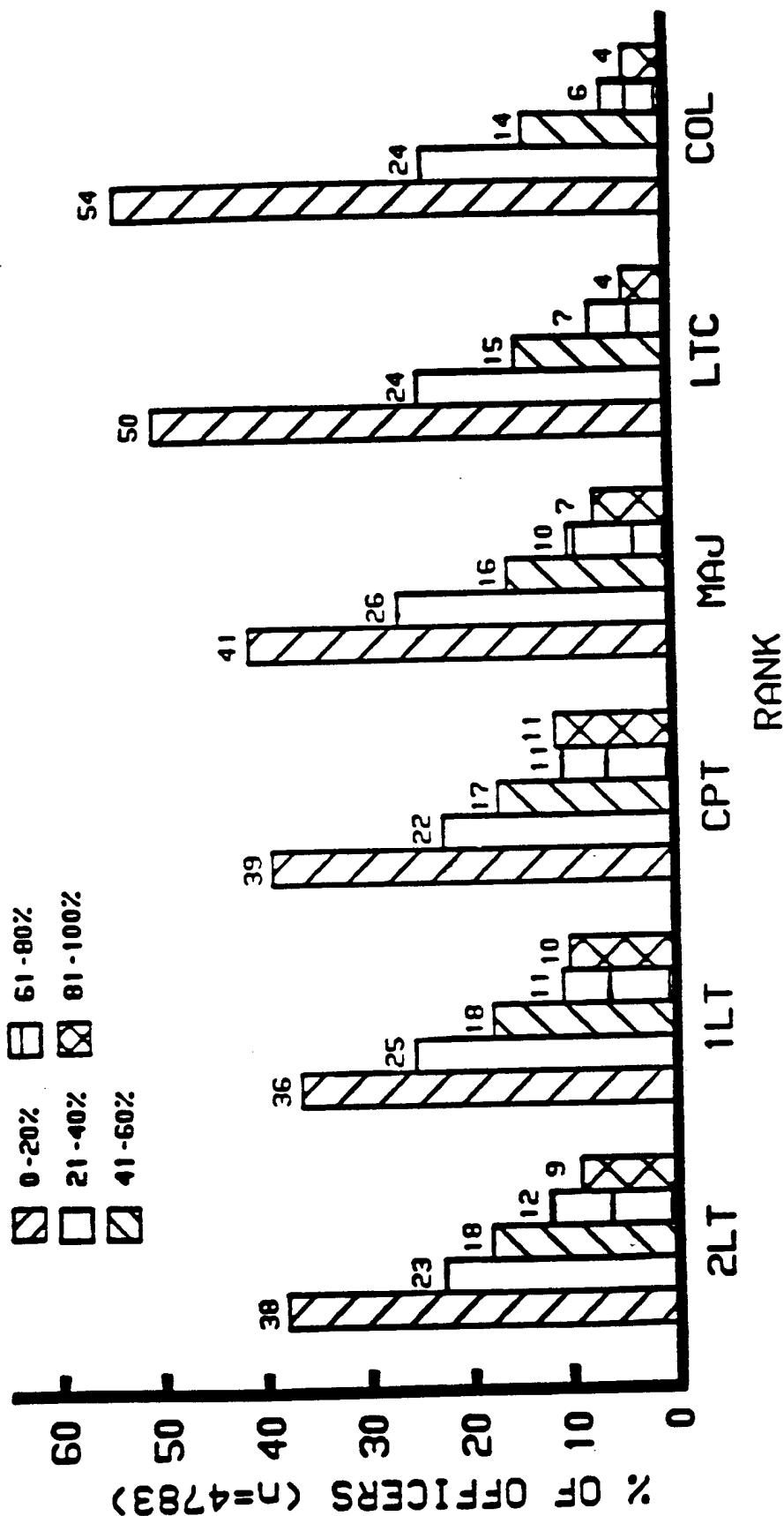


Figure 1. Percent of the job involving technical tasks, as a function of commissioned officer rank.

Discussion

The information presented thus far represents only part of the answer to the question of how the technical, conceptual, and interpersonal nature of the job change as a function of organizational level. It is clear that, for the Army at least, the simplified models of Katz (1974) and Guglielmino and Carroll (1979) need to be modified to take into account:

(a) Differences within organizational levels. Jobs within a given level of the organization cannot be treated as if they were all the same. The data show clear within-level differences. Further analyses of the Leader Requirements Survey data are needed to identify the factors that differentiate jobs at a given level with respect to technical, conceptual, and interpersonal tasks. These factors may include background variables such as type of job and organization, roles (e.g., supervision, commander), and/or patterns of leadership tasks performed.

(b) Differences across organizational levels. As the results above indicate, Army jobs do reflect differences across organizational levels with respect to the technical, conceptual, and interpersonal portion of the job. However, these differences do not coincide completely with the model.

(c) Commissioned and noncommissioned officer roles. Responses by the noncommissioned officers to the Leader Requirements Survey need to be taken into account in establishing an Army model of technical/conceptual/interpersonal requirements by organizational level. To be fully complete, responses to these questions by the very top levels should be included as well.

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✓ THE ARMY LEADER REQUIREMENTS TASK ANALYSIS:

✓ PRELIMINARY COMMISSIONED OFFICER RESULTS

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THE ARMY LEADER REQUIREMENTS TASK ANALYSIS: PRELIMINARY COMMISSIONED OFFICER RESULTS

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THE ARMY LEADER REQUIREMENTS TASK ANALYSIS: PRELIMINARY COMMISSIONED OFFICER RESULTS¹

INTRODUCTION

The purpose of this paper is to provide preliminary commissioned officer results of the Army leader requirements task analysis. The Army leader requirements task analysis was developed to identify the leadership tasks of commissioned officers, second lieutenant through colonel, and noncommissioned officers, sergeant through command sergeant major. It was designed to provide the Army with information for: (a) refinement of its multi-level leadership education and training programs, (b) integration of leadership programs for commissioned and noncommissioned officers, and (c) leadership programs that represent the progressive and sequential nature of Army leadership. The methodology involved a leadership task analysis instrument, the Leader Requirements Survey, developed from extensive interviews with commissioned and noncommissioned officers.

Four publications are available which partially document the leader requirements research to date. The first is a U. S. Army Research Institute research product which contains the commissioned and noncommissioned officer forms of the Leader Requirements Survey, including the entire task list, the answer booklets, and the instructions (Steinberg, 1987). The remaining documents are three conference papers, as follows. Steinberg (1987b) addresses the questions most frequently asked about the leader requirements task analysis (e.g., why a leadership task analysis is needed, why existing task lists were not used, why behaviors rather than competencies were stressed). The Steinberg, van Rijn, and Hunter (1986) paper discusses some of the ways the traditional task analytic approach was adapted for this effort. Topics included are: delineation of the leadership portion of the job, duty headings, task structure, task format, task specificity, task overlap, and task balance. Finally, the Steinberg and Leaman (1987) paper looks at the commissioned officer data from the Army leader requirements task analyses from the perspective of a technical/conceptual/interpersonal model of leadership as a function of organizational level. All three of these conference papers are compiled in Steinberg, 1987a.

The sections which follow include a brief overview of the development of the task list portion of the Leader Requirements Survey, preliminary commissioned officer results, and a short discussion of where we go from here. An expanded discussion of

¹The contents of this paper were briefed to the Director, Center for Army Leadership on 1 March 1988.

the method and results will be presented in a forthcoming ARI research report.

THE DEVELOPMENT OF THE LEADERSHIP TASK LIST

The Leader Requirements Survey consists of three parts. Part I contains background questions preprinted in the answer booklet; Part II contains the task list; and Part III contains the knowledge, skills, and abilities items, additional background items, and special interest questions (see Steinberg, 1987b). For Part II, the task portion, incumbents were asked to rate only those tasks which they do in their current assignment, on the following 7-point rating scale:

Part of Position Scale

- 1 - Insignificant
- 2 - Slightly Significant
- 3 - Somewhat Significant
- 4 - Moderately Significant
- 5 - Quite Significant
- 6 - Highly Significant
- 7 - Extremely Significant

The task list was developed through interviews with incumbents, second lieutenant through colonel and sergeant through command sergeant major. Incumbents were asked about the leadership tasks they perform, with leadership defined as the "process by which a soldier influences others to accomplish the mission" (Headquarters, Department of the Army, 1983, p. 44). Small-group interviews (usually about 6 to a group, but sometimes as many as 15 or more) were conducted with several hundred NCOs and officers at a variety of locations, including Ft. Hood, Ft. Campbell, Ft. Belvoir, Ft. Carson, Ft. Polk, Ft. Bliss, Ft. Lee, and Ft. Eustis.

The interview sessions were approximately 1 1/2 hours in length and focused on the present and, also sometimes, previous assignments of the incumbents. In order to identify leadership tasks that might differentiate between ranks and/or branches, interviewees also were asked to indicate the similarities and differences between the leadership portion of their own positions and those of: (a) soldiers one rank higher and lower than themselves, and (b) soldiers at the same rank in other branches.

The task list was both developed and reviewed in an iterative process over the course of the interviews. After interviewees described what they did in their current assignments, they reviewed the leadership tasks developed from earlier sessions with other incumbents. They were asked also to comment on some tasks derived from other sources, such as instructors in the

schoolhouse, retired military personnel, leadership literature and doctrine, instruction manuals, and other task lists. With each set of interviews, new tasks were added to the preliminary task inventory, existing tasks were clarified, and tasks in similar topic areas were grouped. Headings were selected to reflect the nature of the tasks in each group or individual duty area.

The completed task list then was reviewed by subject-matter experts at CAL and the U. S. Army Sergeants Major Academy (USASMA) to ensure that it was clear, accurate, and complete and that tasks were logically grouped into individual duty areas. Recommendations from these experts guided the final consolidation of the task list.

The final task list contained 560 leadership tasks grouped into 20 individual duty areas. These individual duty areas, in turn, can be grouped into four global duty areas circumscribing Army leadership: (A) Train, Teach, and Develop; (B) Motivate; (C) Resource; and (D) Provide Direction (see Figure 1). These four areas follow from the definition of Army leadership provided above and were derived empirically. In order to "influence others to accomplish the mission," one needs to: (1) train, teach, and develop them so that they can do what is necessary to accomplish the mission; (2) motivate them so that they will do what is required; (3) provide the resources for them to do it (e.g., time, people, money, equipment); and (4) provide direction so that they know what to do. The individual duties (and the number of tasks within each) that comprise these four areas are provided in Figure 2.

PRELIMINARY COMMISSIONED OFFICER RESULTS

The results presented here are preliminary in that they are a portion of the findings for only the commissioned officers responding to the Leader Requirements Survey. The results are presented in three parts: (1) selected background items, (2) critical task data, and (3) knowledge, skills, and abilities (KSA) ratings.

Background Items

The background data for the Leader Requirements Survey are contained in both Part I and Part III of the survey. For the purposes of this preliminary analysis, only a small number of the 56 items in these sections were included.

The total sample size for the commissioned officers was 5033 respondents. Table 1 gives the number of commissioned officer survey respondents by branch (-- all except one officer who did not answer this item. Note that the intent to sample across all branches was successful. The sample sizes by rank were

4 COMPONENTS OF ARMY LEADERSHIP

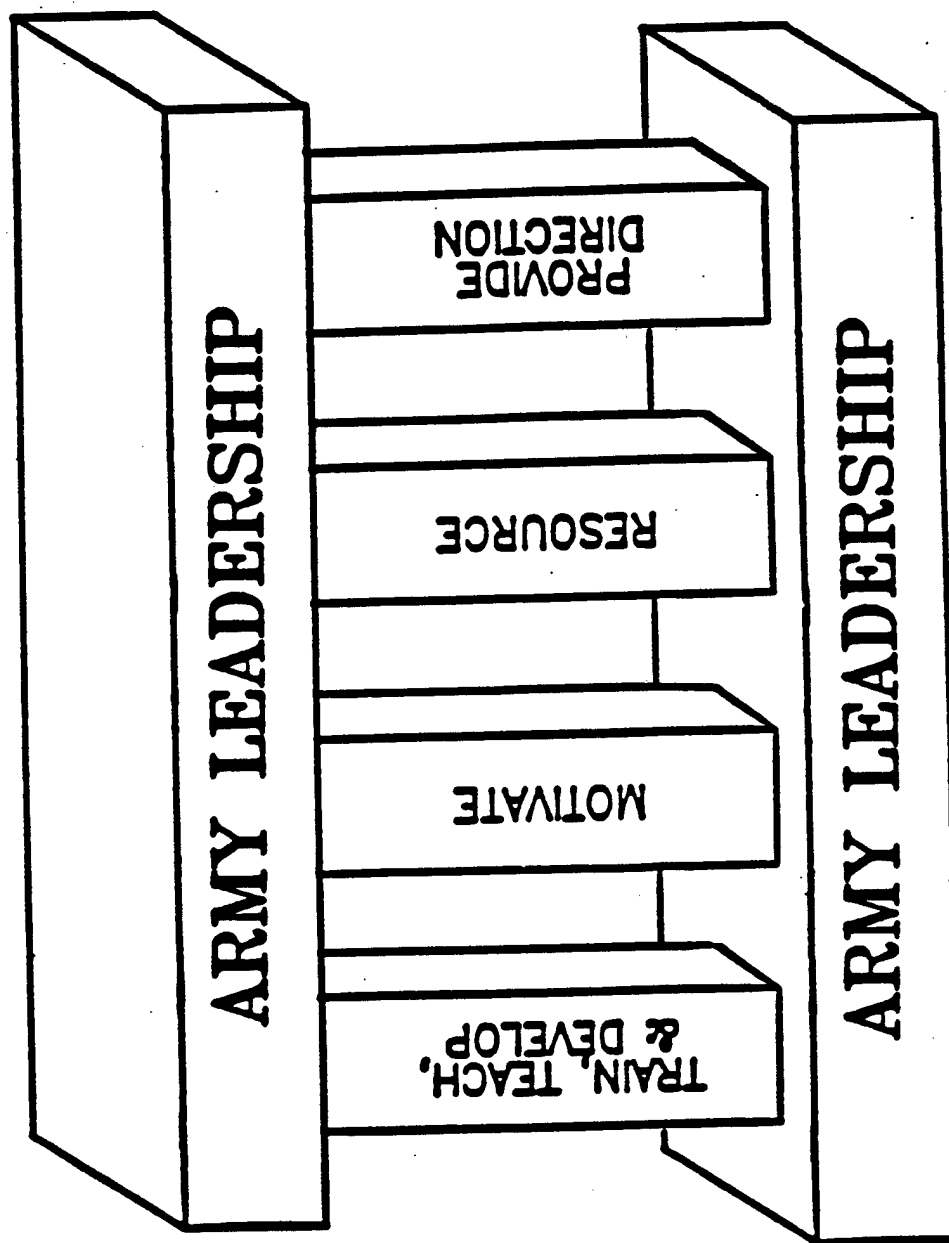


Figure 1. Four components of Army leadership.

NUMBER OF TASKS, BY INDIVIDUAL AND GLOBAL DUTIES

A. TRAIN, TEACH, AND DEVELOP LEADERS	<u>Number of tasks</u>
A. Train soldiers.....	21
B. Teach soldiers.....	18
C. Develop leaders.....	21
D. Plan and conduct training.....	42
E. Train in the field to enter combat.....	44
	Total: 146
B. MOTIVATE	
F. Motivate others (the what).....	13
G. Motivate others (the how).....	42
H. Develop unit cohesion.....	52
I. Reward and discipline subordinates.....	30
J. Take care of soldiers.....	33
	Total: 170
C. RESOURCE	
K. Manage resources.....	40
D. PROVIDE DIRECTION	
L. Perform/supervise administrative functions.....	26
M. Coordinate with others outside the unit.....	20
N. Supervise others.....	20
O. Maintain 2-way information exchange with subordinates.....	21
P. Maintain 2-way information exchange with superiors..	17
Q. Monitor and evaluate performance.....	38
R. Conduct counseling.....	24
S. Establish direction of your unit/element.....	13
T. Provide input for the direction of the larger organization.....	25
	Total: 204
	Grand Total: 560

Figure 2. Number of tasks, by individual and global duties.

lieutenants (n=693), captains (n=940), majors (n=1232), lieutenant colonels (n=1245), and colonels (n=923). For all analyses of the commissioned officer data, second lieutenants and first lieutenants were combined into the larger category of lieutenants because their responses were very similar, and because this combination created a larger overall sample size for lieutenants.

The officers also were asked to indicate the rank officially authorized for their current assignment. As noted in the table, a substantial number of lieutenants, captains, and majors reported a higher duty position rank than their actual rank.

Table 3 contains the results of a question from Section III of the survey that asked officers to indicate the number of immediate subordinates they supervise directly. From the table it can be seen that 70.6% of the respondents reported that they supervise 1 to 10 immediate subordinates.

Table 4 contains the responses to the question: "On the average, how many hours a day are you on duty?" Most of the officers reported working 8 or more hours a day, and 69.2% reported working 10 to 13 hours a day.

One final special item of interest for this preliminary presentation of results was the respondents' evaluation of how adequate the Army's formal school training in leadership was in preparing them to lead. Table 5 presents the results for this item. Note that the percentages are fairly consistent across ranks, with colonels tending to rate the training slightly higher in adequacy. Although 47.4% and 17.7% of the entire sample rated the formal leadership training "moderately adequate" or "highly adequate", respectively, 31.1% rated it lower than that, indicating that there is still room for improvement.

Task Data

The mean number of leadership tasks performed, for each rank separately and for all ranks together, is presented in Table 6. Note that for the entire sample, taking into account all 560 tasks in the task analysis, the mean is 199 tasks. Across ranks, a noticeable U-shaped pattern emerges; there is a continued decline in the mean number of leadership task performed from lieutenants to captains to majors, and then an increase in the mean number of leadership tasks performed by lieutenant colonels and also colonels. Lieutenants reported the largest number of leadership tasks performed.

For the purposes of this preliminary analysis, the focus was on the identification of the critical leadership tasks and the extent to which they might differ according to rank. Critical tasks were defined as those tasks which received a mean rating of

Table 1

LEADER REQUIREMENTS SURVEY RESPONDENTS

COMMISSIONED OFFICERS BY BRANCH

Branch	Number	Percent
Infantry	248	4.9
Engineer	312	6.2
Field Artillery	223	4.4
Air Defense Artillery	169	3.4
Armor	214	4.3
Signal	248	4.9
ADP/Finance/Personnel Management	337	6.7
Chemical	228	4.5
Ordnance	245	4.9
Transportation/Aircraft Maintenance	210	4.2
Chaplains	258	5.1
Quartermaster	280	5.6
Medical	249	4.9
Aviation	195	3.9
Military Police	251	5.0
Military Intelligence	280	5.6
Faculty/ORSA/Force Development	355	7.1
Research & Development	283	5.6
Judge Advocate General	261	5.2
Special Operations	186	3.7
TOTAL	5032	100

Table 2

MORE THAN 25% OF LIEUTENANTS AND CAPTAINS. AND
MORE THAN 20% OF MAJORS ARE IN HIGHER DUTY POSITION
RANKS THAN THEIR ACTUAL RANKS.

DUTY POSITION RANK BY COMMISSIONED OFFICER RANK*
(n=4987)

DUTY POSITION RANK	:	LTS	CPT	MAJ	LTC	COL
=====	:	=====	=====	=====	=====	=====
1LT**	:	70.5	0.9	0.0	0.0	0.0
CPT	:	27.6	69.6	2.1	0.2	0.1
MAJ	:	1.3	27.1	77.3	3.9	0.2
LTC	:	0.4	2.4	20.6	91.8	2.3
COL	:	0.0	0.0	0.0	4.2	97.4
-----	:	-----	-----	-----	-----	-----

* The numbers in this table are percents.

** No duty position rank of 2LT exists.

MOST RESPONDENTS SUPERVISE 1-10 IMMEDIATE SUBORDINATES.

**NUMBER OF IMMEDIATE SUBORDINATES SUPERVISED DIRECTLY,
BY COMMISSIONED OFFICER RANK (n=4928)**

NUMBER OF SUBORDINATES	LTS	CPT	MAJ	LTC	COL	TOTAL SAMPLE
NONE	8.2	25.5	28.2	16.1	5.0	17.7
1 TO 5	63.3	51.5	46.6	42.5	39.0	47.4
6 TO 10	17.7	15.2	18.3	29.2	33.9	23.2
11 TO 15	4.8	3.9	5.1	7.9	10.6	6.6
16 TO 20	2.5	1.4	1.0	1.8	5.5	2.3
21 TO 25	0.9	0.6	0.4	1.0	2.1	1.0
26 OR MORE	2.6	1.9	0.4	1.6	3.9	1.9

Table 4

HOURS ON DUTY PER DAY, BY COMMISSIONED OFFICER RANK
(n=4920)

HOURS	LTS	CPT	MAJ	LTC	COL	TOTAL
						SAMPLE
5 OR LESS	0.3	0.4	0.3	0.3	0.1	0.3
6 TO 7	1.2	1.7	2.2	1.3	0.9	1.5
8 TO 9	20.3	25.5	26.3	25.5	24.0	24.7
10 TO 11	43.6	40.0	46.1	47.6	50.7	45.8
12 TO 13	29.2	27.1	21.5	20.8	21.1	23.4
14 TO 15	4.6	4.8	2.9	4.0	2.2	3.6
16 OR MORE	0.9	0.6	0.8	0.7	1.0	0.8

Table 5

QUESTION:
HOW ADEQUATE WAS THE ARMY'S FORMAL SCHOOL TRAINING IN
LEADERSHIP IN PREPARING YOU TO LEAD? (n=4840)

	LTS	CPT	MAJ	LTC	COL	TOTAL
	PERCENT OF					SAMPLE
	=====	=====	=====	=====	=====	=====
I DID NOT RECEIVE ANY	3.7	4.4	2.5	3.4	5.1	3.7
ARMY FORMAL TRAINING IN:						
LEADERSHIP						
NOT ADEQUATE	8.9	9.6	8.9	5.2	2.6	6.9
SLIGHTLY ADEQUATE	25.2	26.4	28.6	24.4	15.0	24.2
MODERATELY ADEQUATE	48.8	47.2	47.3	48.0	46.1	47.4
HIGHLY ADEQUATE	13.4	12.4	12.7	19.1	31.3	17.7

Table 6

LEADER REQUIREMENTS SURVEY

MEAN NUMBER OF TASKS PERFORMED, BY COMMISSIONED OFFICER RANK
(n=5033)

	LTS	CPT	MAJ	LTC	COL	ALL
	(n=693)	(n=940)	(n=1232)	(n=1245)	(n=923)	(n=5033)
MEAN NUMBER OF	238.5	191.4	172.3	198.1	213.3	199.0
TASKS PERFORMED						

5.00 or more on the 7-point "Part of Position" scale, for one or more ranks. Critical tasks were defined thus in order not to mask high individual-rank means, as might have occurred with criteria dependent on the overall mean. It is important to remember that ratings on this 7-point scale were provided only for those tasks performed in their current assignment. Therefore, they do not take into account the percent of officers performing each of these tasks. For example, small numbers of officers could perform a certain leadership task, and the task would still have very high mean ratings on the "Part of Position" scale if those officers who do perform the task judge it to be a very important part of their leadership job. The information on percent performing each critical task, as well as information on "Part of Position" ratings for tasks not falling within the criteria for critical tasks, will be incorporated in future reports.

The critical tasks were divided into two categories: (a) critical tasks that are relatively stable across ranks and (b) critical tasks that are not relatively stable across ranks. "Relatively stable" tasks were defined as those for which the means for any two individual ranks differed by less than 1.00. Conversely, "not relatively stable" tasks were defined as those for which the means for any two individual ranks differed by more than 1.00.

Appendix A contains all of the critical tasks that were relatively stable across ranks, and Appendix B contains all of the critical tasks that were not relatively stable across ranks. In both cases, the critical tasks are presented by global duty area and then within each global duty area by individual duty area (see Figure 2 for a listing of global and individual duty areas). Finally, within each individual duty area the tasks are ranked top down by overall-mean "Part of Position" rating. Task numbers in these appendices are given in two formats. The first, which starts with a letter (e.g., A4) indicates the individual duty and the number of the task within that individual duty (in this example: the fourth task in individual Duty A - Train soldiers). The second task number refers to the task number as it appears in the Leader Requirements Survey.

Critical Tasks that are Relatively Stable Across Ranks.
Although Appendix A contains the critical tasks that are relatively stable, there are some trends across ranks (e.g., gradual increases or decreases from lieutenants to colonels) that may be of interest. For example, Tasks C2, C3, and C17 each exhibit a gradual upward trend from lieutenant to colonel. Tasks D1, D2, and D31 exhibit a gradual downward trend from lieutenant to colonel. It would be unjustified to completely ignore some of these gradual trends in evaluating the sequential and progressive nature of leadership. However, since these trends reflect differences of less than 1.00 between the ranks, for any one task, the tasks were placed in the "relatively stable" category.

Another point to note when examining Appendix A is that no task in individual Duty B (Teach Soldiers) met the criteria for critical. On the other hand, all the tasks in individual Duty S (Establish Direction for Your Unit/Element) are listed in Appendix A because they met the criteria for critical and were all relatively stable across ranks.

The 20 critical tasks with the highest overall means all fall in the "relatively stable" category and are distributed among all four components of Army leadership. Two are from Train, Teach, and Develop (tasks C13 and E12), ten from Motivate (F1, G1, G2, G6, G7, G11, G24, G30, I1, J1), five from Resource (K1, K2, K3, K22, and K32), and three from Provide Direction (N1, N9, and S13).

Critical Tasks that are Not Relatively Stable Across Ranks.
There are far fewer critical tasks in the "not relatively stable" category than in the "relatively stable" category, for all four components of Army Leadership (see Appendix B).

All the critical, not relatively stable tasks in the Train, Teach, and Develop component (Global Duty A) come from individual Duty E (Train in the Field to Enter Combat), and all 18 of them were rated highest by the lieutenants and progressively lower by each successive rank (see the two graphs in Figures 3 and 4).

For the Motivate component (Global Duty B), all of the individual duty areas were represented by either one or two critical tasks. In addition, there are two different trends that emerge within the Motivate component (see Figure 5). Tasks H23 and I8 display more of an upward trend (with H23 peaking at lieutenant colonels). The rest of the critical tasks in the Motivate component display a downward trend with the highest ratings by the lieutenants.

For the Resource component (Global Duty C), only one critical task is not stable across ranks. For Task K18 (Make duty assignments for officers) the mean "Part of Position" rating steadily increases from lieutenants to a peak at lieutenant colonels and then slightly declines for colonels (see Figure 6).

Finally, for the Provide Direction component (Global Duty D), note that either one or three tasks is represented from five of the nine individual duties in that component and there are two trends (see Figure 7). Tasks M10, N20, Q33, Q34, Q37, and T7 have a fairly consistent upward trend across ranks, whereas tasks N10, N11, and P5 have a fairly consistent downward trend across ranks.

All in all, there are 173 tasks which are critical and relatively stable across ranks (Appendix A) and 31 tasks which are critical and not relatively stable across ranks

GLOBAL DUTY A: TRAIN, TEACH, & DEVELOP Critical Tasks Not Stable Across Ranks (PART I)

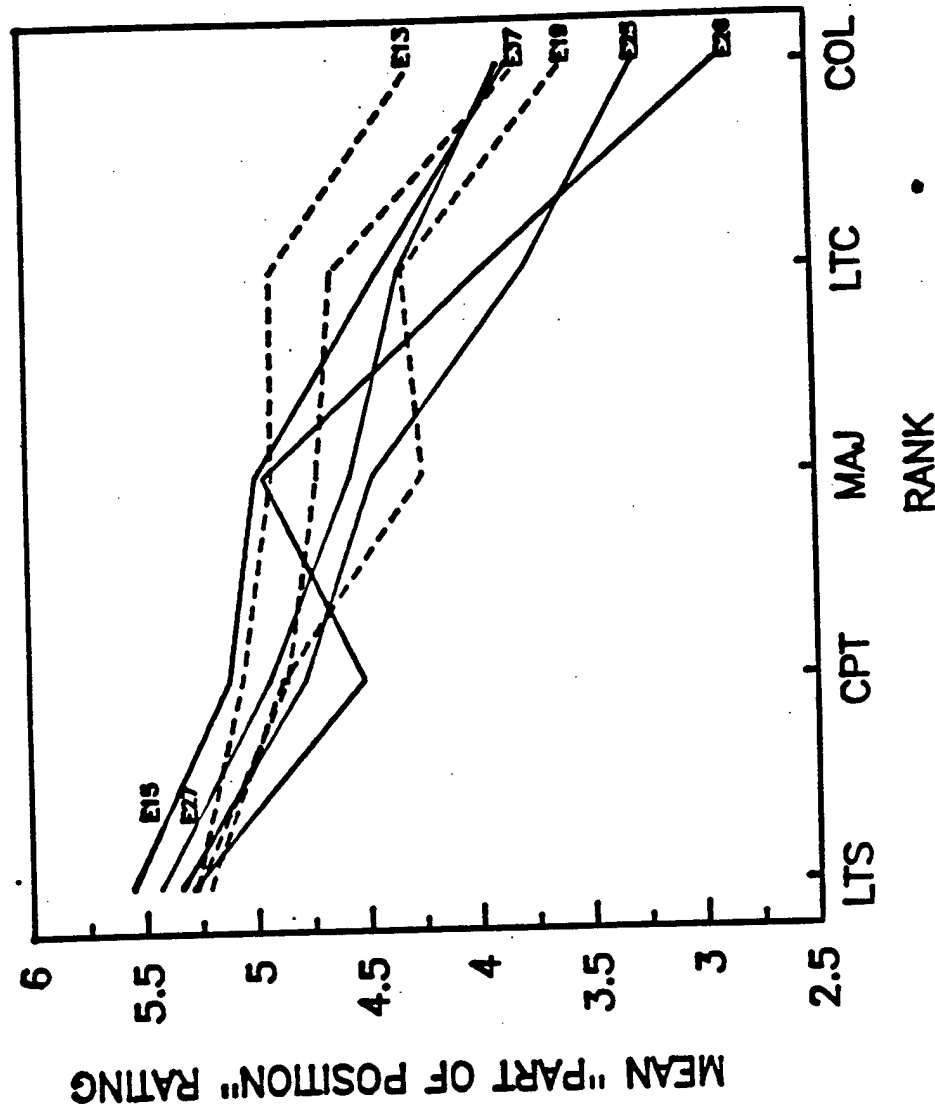


Figure 3. Graph of Global Duty A, critical tasks not relatively stable, Part I.

GLOBAL DUTY A: TRAIN, TEACH, & DEVELOP Critical Tasks Not Stable Across Ranks (PART II)

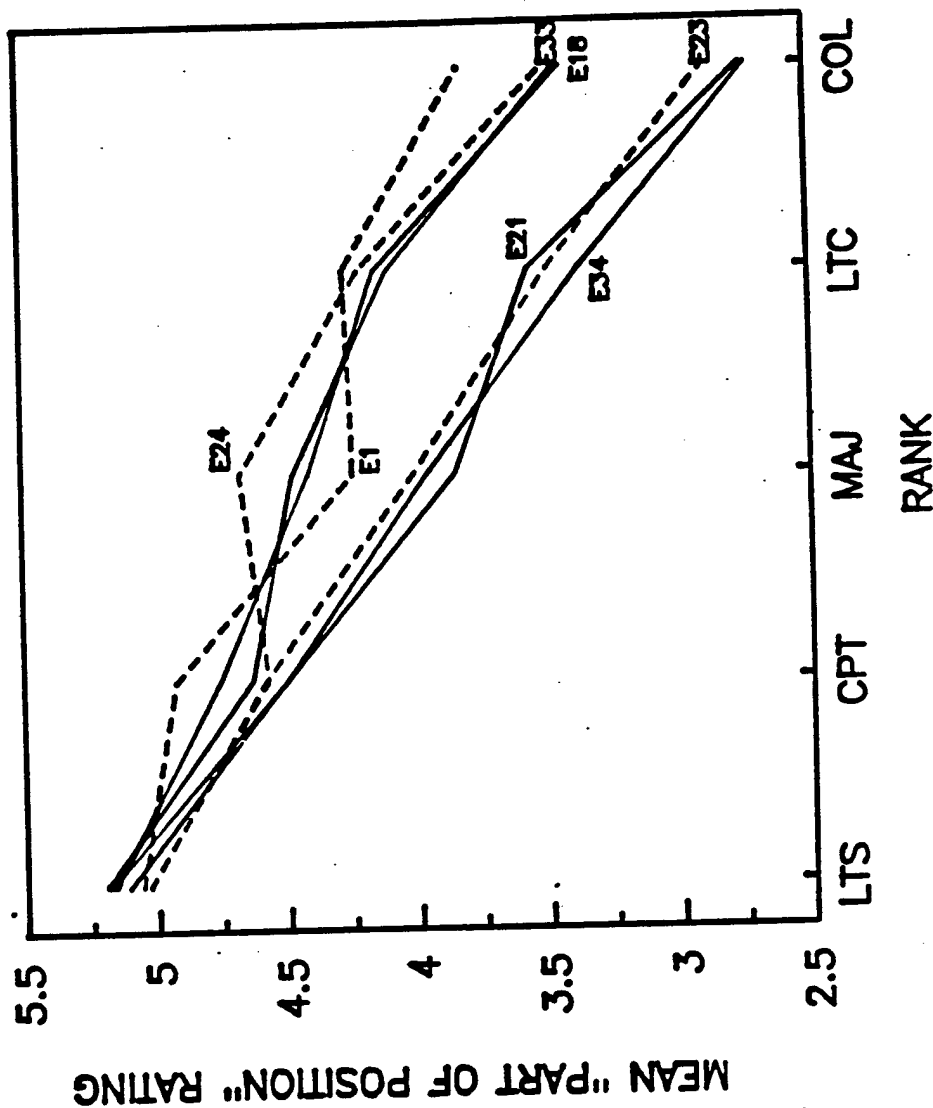


Figure 4. Graph of Global Duty A, critical tasks not relatively stable, Part II.

GLOBAL DUTY B: MOTIVATE

Critical Tasks Not Stable Across Ranks

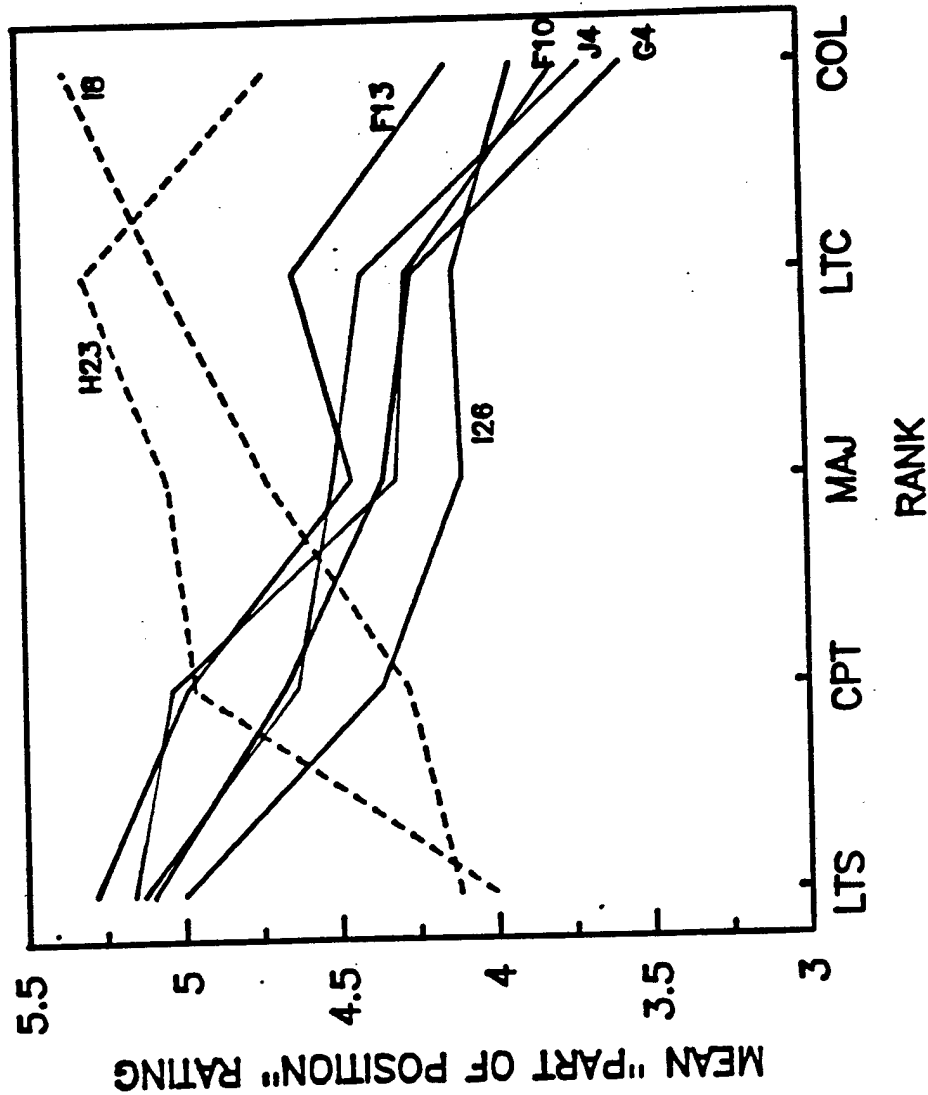


Figure 5. Graph of Global Duty B, critical tasks not relatively stable.

(Appendix B). The total number of tasks with a mean "Part of Position" rating equal or greater than five for each rank is as follows: 152 tasks for lieutenants, 69 tasks for captains, 69 tasks for majors, 91 tasks for lieutenant colonels, and 109 tasks for colonels. Figure 8 is a breakout of these totals for each rank, by global duty area. The Train, Teach, & Develop component of leadership is dominated by lieutenants who reported at least twice as many tasks performed in this area than any other rank. For both the Motivate and Provide Direction components of leadership there are U-shaped patterns across ranks, with lieutenants and colonels reporting the most tasks (with mean "Part of Position" rating equal or greater than five) in each of these areas. Finally, the Resource component of leadership has a uniform pattern across all ranks, with all ranks reporting approximately the same number of significant tasks.

Knowledge, Skills, and Abilities (KSA) Ratings

The 20 Knowledge, Skills, and Abilities (KSA) in Section III of the survey were rated on the following 7-point scale:

Importance to your CURRENT JOB

- 1 - Not important
- 2 - Of little importance
- 3 - Somewhat important
- 4 - Moderately important
- 5 - Quite important
- 6 - Very important
- 7 - Extremely important

Table 7 shows these KSA ranked top-down by overall (i.e., across all ranks) mean importance ratings. Note that five of the six highest KSA are in the communication area and that this is true for each individual rank, as well. Also note that the means for individual ranks differ by more than 1.00 for three KSA. As officer rank increases, the mean ratings for KSA 9 increase, and the mean ratings for KSA 12 and 13 decrease. The mean ratings for the remaining 17 KSA were relatively consistent across rank.

WHERE ARE WE, AND WHERE DO WE GO FROM HERE?

The results presented above delineated four component areas of Army leadership: (a) Train, Teach, and Develop, (b) Motivate, (c) Resource, and (d) Provide Direction. Within each of these four areas, and within the individual duties as well, two groups of critical leadership tasks were identified: (a) critical tasks that are relatively stable across ranks, and (b) critical tasks that are not relatively stable across ranks. For each critical task, the overall mean "Part of Position" rating and the individual rank means were presented. For the critical tasks

GLOBAL DUTY C: RESOURCE

Critical Tasks Not Stable Across Ranks

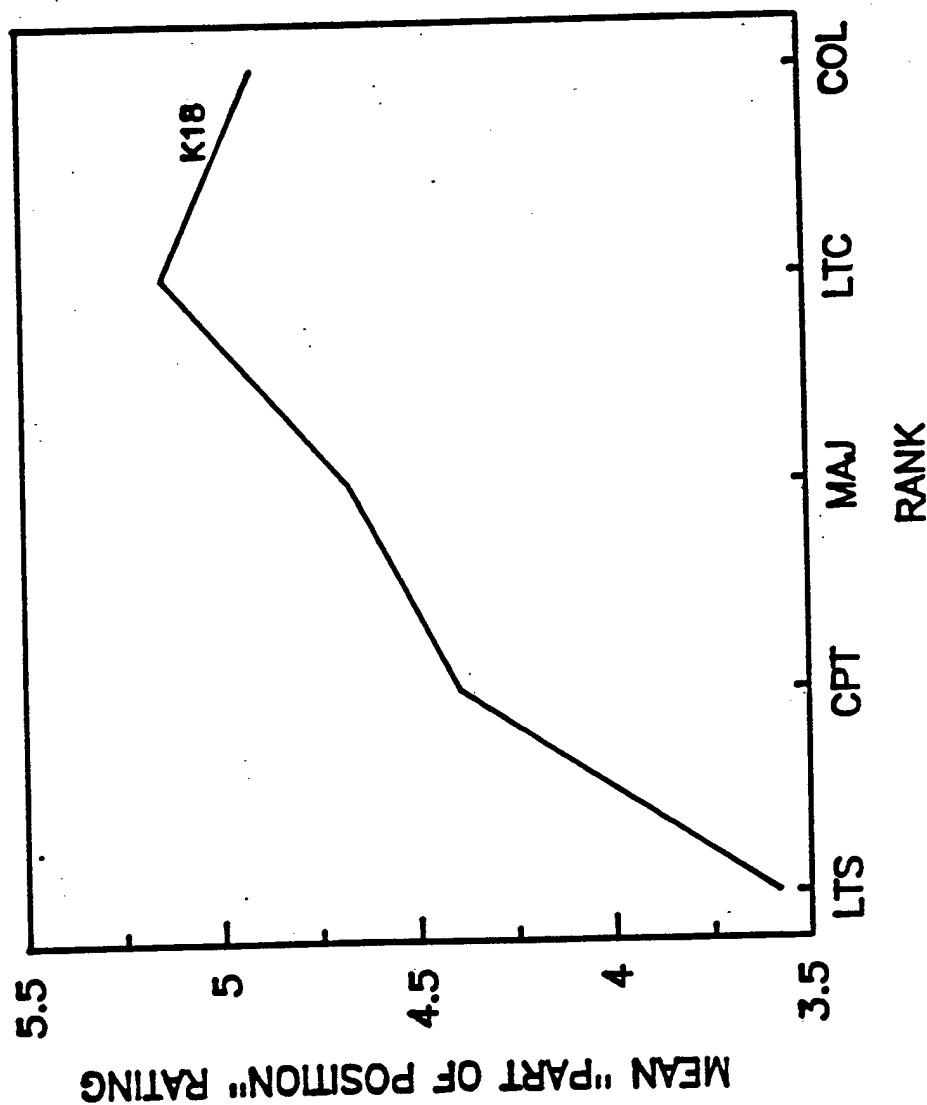


Figure 6. Graph of Global Duty C, critical tasks not relatively stable.

GLOBAL DUTY D: PROVIDE DIRECTION Critical Tasks Not Stable Across Ranks

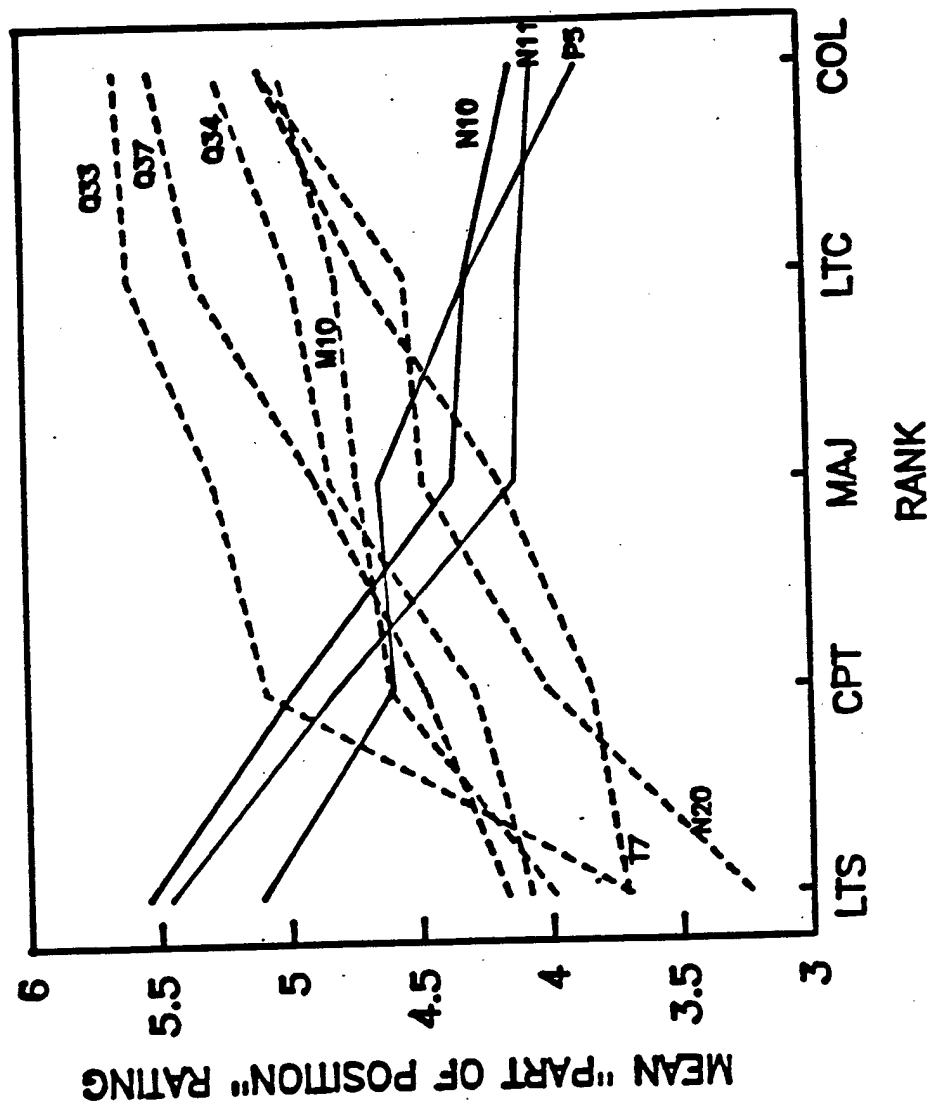


Figure 7. Graph of Global Duty D, critical tasks not relatively stable.

NUMBER OF TASKS WITH MEAN SIGNIFICANCE RATING EQUAL OR GREATER THAN FIVE

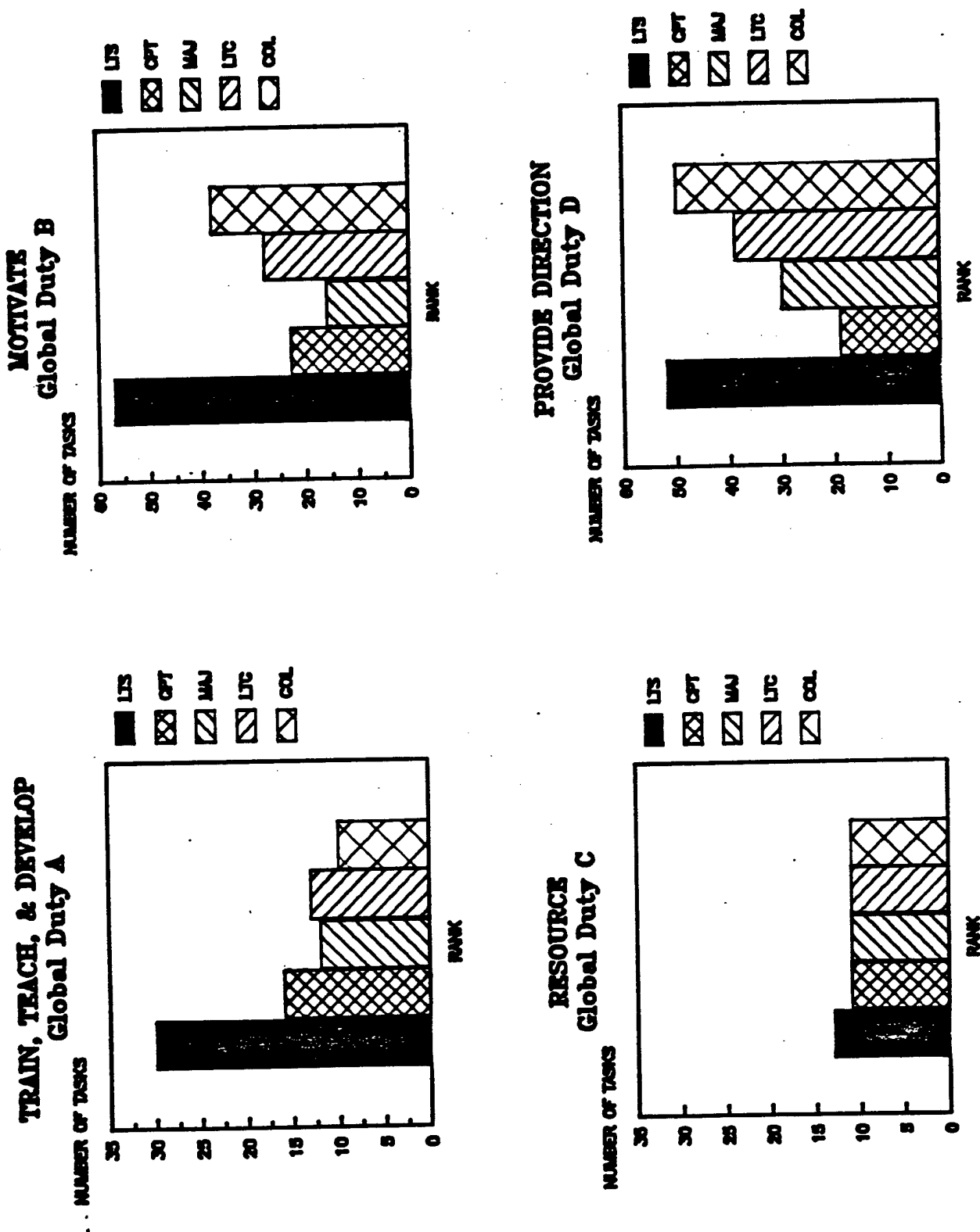


Figure 8. Number of tasks with mean significance rating equal or greater than five.

Table 7

Communication abilities and knowledges were rated most important, by all ranks.

LEADER REQUIREMENTS
KSAOs: Mean Importance Ratings

RANK

KSAO	KSA	ALL	LTS	CPT	MAJ	LTC	COL
14	Ability to communicate effectively in writing	6.37	6.06	6.29	6.42	6.47	6.50
8	Ability to speak effectively/clearly	6.34	6.05	6.31	6.33	6.43	6.46
18	Ability to make decisions	6.28	6.33	6.10	6.11	6.32	6.60
10	Ability to listen effectively/actively	6.15	5.90	6.08	6.13	6.23	6.33
1	Knowledge of grammar	6.11	5.93	6.08	6.18	6.15	6.12
2	Knowledge of spelling	6.00	5.94	6.02	6.08	6.00	5.93
15	Ability to analyze data	5.58	5.09	5.48	5.57	5.73	5.83
19	Technical and tactical proficiency	5.41	5.58	5.40	5.39	5.40	5.31
9	Ability to deliver talks before large audiences	5.27*	4.47	5.19	5.26	5.48	5.66
4	Knowledge of military correspondence	5.24	4.98	5.33	5.38	5.34	5.05
11	Ability to develop rapport in interviews	4.82	4.39	4.64	4.74	4.96	5.23
6	Knowledge of organizational structure of the Army	4.82	4.38	4.64	4.84	4.92	5.15
5	Knowledge of military protocol	4.75	4.50	4.49	4.70	4.87	5.10
3	Knowledge of national current events	4.38	4.00	4.18	4.26	4.51	4.83
20	Ability to develop cohesive units/elements	4.24	4.60	3.89	3.84	4.30	4.69
12	Ability to read technical manuals	4.22*	4.84	4.53	4.17	4.04	3.71
17	Ability to use computers for word processing	4.14	3.74	4.42	4.35	4.13	3.86
13	Ability to read aloud clearly/fluently	3.78*	4.20	3.98	3.61	3.64	3.62
16	Ability to use computers for statistical analyses	3.42	2.85	3.34	3.51	3.54	3.62
7	Knowledge of survey-design procedures	2.48	2.39	2.54	2.47	2.44	2.59

*Means for individual ranks differ by more than 1.00.

that are not relatively stable across ranks, graphs were presented to highlight the trends across rank. In addition to the critical task information, overall and individual rank means were presented for the 20 KSA. Finally, analyses of some of the background variable were presented.

The analyses presented thus far were only for the commissioned officers, only for the critical tasks, only in terms of the "Part of Position" rating, and broken out only by rank. Future analyses will address the NCO data, the remaining tasks, percent performing the tasks in addition to "Part of Position" rating, in combination with breakouts by rank and other relevant variables (e.g., branch, type of unit). Similarly, more in-depth analyses for the KSA will be conducted as well.

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APPENDIX A

CRITICAL TASKS (i.e., mean significance rating = or > 5, for 1 or more ranks)
THAT ARE RELATIVELY STABLE ACROSS RANKS (i.e., means differ by < 1.00)

PART OF POSITION
1 - INSIGNIFICANT
2 - SLIGHTLY SIGNIFICANT
3 - SOMEWHAT SIGNIFICANT
4 - MODERATELY SIGNIFICANT
5 - QUITE SIGNIFICANT
6 - HIGHLY SIGNIFICANT
7 - EXTREMELY SIGNIFICANT

Global Duty A: TRAIN, TEACH, & DEVELOP
(Duties A-E, 146 tasks)

Mean "Part of Position" rating

Task # Task			ALL	:	LTS	CPT	MAJ	LTC	COL
A. Train soldiers	A4	4 Develop well-trained unit/ element	5.34	:	5.32	5.31	5.14	5.45	5.46
	A1	1 Improve performance of subordinates	5.32	:	5.20	5.03	5.12	5.47	5.67
	A20	20 Train soldiers to meet time requirements	5.08	:	5.16	5.17	5.07	5.06	4.98
	A19	19 Train soldiers to do their jobs without supervision	5.02	:	4.91	5.12	5.01	5.01	5.03
	A14	14 Train soldiers to recognize ethical dimensions of both their decisions and behaviors	5.01	:	4.65	4.91	4.90	5.21	5.27
C. Develop Leaders	C13	52 Allow subordinate leaders to learn from their mistakes	5.48	:	5.42	5.34	5.46	5.60	5.52
	C4	43 Train subordinates to take initiative	5.45	:	5.28	5.30	5.32	5.57	5.66
	C12	51 Support decisions of subordinate leaders	5.32	:	5.37	5.32	5.13	5.37	5.40
	C3	42 Delegate authority to the lowest appropriate level	5.17	:	4.97	4.99	5.02	5.28	5.46
	C2	41 Delegate decision-making to subordinates	5.12	:	4.99	4.84	5.01	5.22	5.41
	C17	56 Identify potential leaders	5.05	:	4.89	4.73	4.76	5.19	5.47
	C20	59 Provide soldiers opportunity to receive formal training	4.89	:	4.93	5.06	4.66	4.94	4.91

Task #	Task	ALL	LTS	CPT	MAJ	LTC	COL
D34	95 Train officers	5.04	4.26	5.03	5.04	5.22	5.16
D13	73 Evaluate effectiveness of training	5.02	4.96	5.14	5.04	5.01	4.94
D30	91 Train people who are higher in rank than you	4.98	4.98	5.01	4.89	5.04	5.01
D2	62 Determine what should be trained in the field	4.72	5.19	4.84	4.60	4.54	4.32
D1	61 Determine what should be trained in garrison	4.68	5.00	4.76	4.62	4.57	4.35
D31	92 Train people who are lower in rank than you	4.65	5.08	4.90	4.68	4.40	4.19
E12	114 Ensure mission accomplishment	5.86	6.07	5.86	5.74	5.86	5.74
E16	118 Determine how to accomplish the mission	5.44	5.61	5.51	5.46	5.40	5.09
E9	111 Take charge in the absence of instructions from commander	5.40	5.81	5.36	5.37	5.16	4.99
E11	113 State the mission	5.36	5.57	5.36	5.17	5.46	5.16
E32	134 Maintain communication with the next higher headquarters	5.28	5.69	5.38	5.21	5.05	4.73

CRITICAL TASKS (i.e., mean significance rating = or > 5, for 1 or more ranks)
 THAT ARE RELATIVELY STABLE ACROSS RANKS (i.e., means differ by < 1.00)

PART OF POSITION
 1 - INSIGNIFICANT
 2 - SLIGHTLY SIGNIFICANT
 3 - SOMEWHAT SIGNIFICANT
 4 - MODERATELY SIGNIFICANT
 5 - QUITE SIGNIFICANT
 6 - HIGHLY SIGNIFICANT
 7 - EXTREMELY SIGNIFICANT

Global Duty B: MOTIVATE
 (Duties F-J, 170 tasks)

Mean "Part of Position" rating

Task # Task			ALL	LTS	CPT	MAJ	LTC	COL
F. Motivate others (the what)	F1	147 Motivate subordinates	5.56	5.59	5.39	5.30	5.67	5.81
	F7	153 Motivate soldiers to carry out the mission	5.40	5.55	5.45	5.17	5.42	5.40
	F6	152 Motivate subordinates to take on special projects with short suspences	5.12	5.11	5.04	5.02	5.11	5.28
	F8	154 Maintain troop interest in training in garrison	4.86	5.06	5.00	4.68	4.85	4.62
	F3	149 Motivate troops to sustain combat-ready teams	4.85	5.19	5.03	4.73	4.75	4.27
	F4	150 Motivate troops to become more aggressive	4.80	5.04	5.01	4.69	4.72	4.34
	F11	157 Motivate soldiers who have attitude problems	4.66	5.12	4.86	4.35	4.50	4.40
G. Motivate others (the how)	G1	160 Set the example	6.10	6.19	6.03	5.93	6.16	6.21
	G2	161 Demonstrate Army values	5.88	5.80	5.82	5.80	5.96	6.00
	G6	165 Foster a positive command climate	5.86	5.67	5.79	5.67	5.97	6.12
	G30	189 On daily basis, have face-to-face contact with immediate subordinates	5.71	5.95	5.75	5.57	5.65	5.67
	G7	166 Give your soldiers the best leaders available	5.70	5.59	5.66	5.58	5.79	5.86
	G11	170 Recognize soldier accomplishments	5.68	5.78	5.61	5.49	5.72	5.83
	G24	183 Share the hardship with soldiers in the field	5.59	5.94	5.71	5.45	5.62	5.00

Task # Task			ALL :	LTS	CPT	MAJ	LTC	COL
G23	182	In combat-type situations, remain w/the element you lead	5.21 :	5.56	5.28	5.17	5.13	4.57
G8	167	Provide resources needed to fight the battle	5.19 :	5.25	5.04	5.40	5.14	5.14
G5	164	Use the authority of the commander	5.15 :	5.14	5.23	4.89	5.12	5.39
G28	187	Brief the unit on its strengths	5.15 :	5.34	5.10	5.05	5.17	5.09
G29	188	Brief the unit on its weaknesses	5.13 :	5.33	5.14	5.05	5.11	5.05
G31	190	Coach subordinates on career development	5.13 :	4.86	4.99	5.03	5.28	5.31
G22	181	Train subordinates in realistic situations/exercises	5.00 :	5.16	5.14	5.02	5.03	4.49
G14	173	Provide challenges to keep up motivation	4.99 :	5.02	5.02	4.77	5.07	5.07
G9	168	Explain why tasks need to be done	4.97 :	5.19	4.90	4.83	4.96	5.00
G21	180	Remain available to immediate subordinates until they finish for the day	4.96 :	5.50	5.29	4.74	4.74	4.70
G33	192	Obtain input from subordinates for SOPs	4.96 :	5.06	5.08	4.94	4.91	4.80
G12	171	Inform unit about why you rewarded an individual	4.92 :	5.12	5.04	4.57	4.90	4.93
G19	178	Refrain from doing subordinates' jobs	4.91 :	4.72	4.72	4.78	5.08	5.13
G37	196	Require subordinates to maintain military bearing and appearance in the field	4.89 :	5.02	4.97	4.81	4.94	4.59
G17	176	Reduce the number of training distractors	4.86 :	4.67	5.05	4.83	4.87	4.86
G27	186	Conduct inspections	4.50 :	5.32	5.13	4.79	4.89	4.81

G. Motivate others (the how)

Task #	Task	ALL	LTS	CPT	MAJ	LTC	COL	
H26	227	Set unit climate	5.34	4.89	5.08	5.04	5.66	5.69
H25	226	Assess the climate of the unit	5.32	4.89	5.34	5.09	5.52	5.55
H40	241	Communicate the unit mission	5.31	5.23	5.20	5.13	5.46	5.42
H42	243	Make the soldier feel needed by the unit	5.17	5.08	5.02	5.00	5.35	5.34
H22	223	Attend ceremonies for subordinates	5.17	5.32	5.25	4.86	5.21	5.24
H16	217	Develop close working relationships with subordinates	5.16	5.26	5.08	5.03	5.18	5.28
H19	220	Act as a buffer between superior and subordinates	5.13	5.15	5.07	5.03	5.16	5.23
H8	209	Encourage subordinates to set standards higher than required	5.11	5.28	5.27	5.00	5.01	5.00
H33	234	Inform newcomers of the priorities of the unit	5.05	4.97	4.91	4.78	5.27	5.17
H27	228	Monitor unit cohesion	5.05	4.92	5.03	4.91	5.15	5.15
H28	229	Identify sources of discontent	5.01	4.99	5.02	4.73	5.10	5.17
H29	230	Dispel rumors	4.99	4.91	4.97	4.79	5.11	5.14
H9	210	Encourage the unit to critique its own performance	4.96	4.92	5.03	4.91	5.04	4.87
H41	242	Align individual and unit goals	4.96	4.81	4.83	4.86	5.14	5.04
H11	212	Obtain subordinate input to clarify unit goals	4.89	4.84	4.70	4.82	4.94	5.08
H2	203	Hold group planning sessions with subordinates	4.86	4.62	4.81	4.80	4.92	5.02
H10	211	Ask subordinate leaders what should be trained	4.85	5.06	4.92	4.76	4.89	4.59
H39	240	Instill belief that your unit is better than other units	4.82	5.16	4.70	4.65	4.89	4.67

Task # Task			ALL :	LTS	CPT	MAJ	LTC	COL
1. Reward and discipline subordinates	11	254 Tell soldiers when they are performing well	5.64 :	5.69	5.54	5.49	5.73	5.75
	16	259 Recommend subordinates for promotion	5.33 :	5.25	5.11	5.17	5.42	5.59
	17	260 Recommend awards for soldiers	5.26 :	5.35	5.17	5.01	5.30	5.45
	19	262 Approve recommendations for awards	5.17 :	4.94	4.76	4.70	5.36	5.47
	12	255 Give formal positive counseling statements	4.96 :	5.16	4.99	4.78	4.91	5.00
	15	258 Write letters of appreciation to recognize subordinate performance	4.88 :	4.85	4.81	4.70	4.95	5.03
	111	264 Make the decision to give a soldier time off	4.82 :	5.10	4.89	4.63	4.81	4.76
	119	272 Discipline subordinates for inappropriate behavior	4.63 :	5.09	4.65	4.30	4.60	4.48
	116	269 Counsel subordinates about potential disciplinary action	4.56 :	5.06	4.69	4.30	4.41	4.36
	117	270 Recommend disciplinary actions	4.49 :	5.09	4.49	4.22	4.34	4.30
	113	266 Reward achievement by giving more responsibility	4.92 :	4.99	4.78	4.81	4.97	5.01

Task # Task			ALL :	LTS	CPT	MAJ	LTC	COL
J. Take care of soldiers	J1	284 Foster a supportive, caring environment	5.49 :	5.28	5.52	5.26	5.65	5.76
	J24	307 Ensure the absence of sexual harassment	5.19 :	5.46	5.16	4.96	5.18	5.24
	J9	292 Promote physical fitness	5.16 :	5.48	5.14	4.87	5.20	5.19
	J21	304 Avoid fraternization with female soldiers	5.00 :	5.41	5.02	4.91	4.89	4.80
	J25	308 Enforce crime-prevention procedures	4.93 :	5.27	4.87	4.56	4.88	5.07
	J23	306 Discourage fraternization	4.84 :	5.17	4.83	4.71	4.62	4.71
	J2	286 Ensure that subordinates follow good health/hygiene practices in garrison	4.80 :	5.11	4.79	4.73	4.75	4.41
	J10	293 Assist subordinates with their personal problems	4.80 :	5.06	4.88	4.56	4.85	4.73
	J22	305 Avoid fraternization with male soldiers	4.74 :	5.23	4.77	4.56	4.59	4.47

CRITICAL TASKS (i.e., mean significance rating = or > 5, for 1 or more ranks)
 THAT ARE RELATIVELY STABLE ACROSS RANKS (i.e., means differ by < 1.00)

PART OF POSITION

- 1 - INSIGNIFICANT
- 2 - SLIGHTLY SIGNIFICANT
- 3 - SOMEWHAT SIGNIFICANT
- 4 - MODERATELY SIGNIFICANT
- 5 - QUITE SIGNIFICANT
- 6 - HIGHLY SIGNIFICANT
- 7 - EXTREMELY SIGNIFICANT

Global Duty C: RESOURCE
 (Duty K, 40 tasks)

Mean "Part of Position" rating

Task #	Task	ALL	LTS	CPT	MAJ	LTC	COL
K1	317 Manage time	5.97	6.08	5.93	5.89	5.98	6.05
K2	318 Manage people/manpower	5.84	5.83	5.63	5.68	5.91	6.12
K3	319 Manage information	5.83	5.88	5.88	5.80	5.79	5.83
K22	338 Determine your own responsibilities	5.53	5.46	5.46	5.41	5.65	5.64
K32	348 Gather information needed to do the job right	5.52	5.57	5.61	5.51	5.50	5.44
K6	322 Solve each problem in order of priority	5.46	5.78	5.54	5.34	5.41	5.33
K5	321 Conduct crisis management (Put out fires)	5.45	5.50	5.51	5.39	5.43	5.43
K9	325 Seek ways to improve productivity	5.44	5.49	5.35	5.29	5.48	5.63
K4	320 Manage things (money, supplies, equipment, etc.)	5.43	5.60	5.42	5.31	5.33	5.59
K34	350 Determine what is needed to accomplish the mission (e.g., ammunition, supply, transportation, equipment)	5.34	5.60	5.42	5.26	5.31	5.18
K35	351 Monitor/delegate activities that must be integrated	5.09	4.89	5.11	5.09	5.07	5.19
K38	354 Ensure that needed equipment/material is available	4.99	5.27	5.04	4.90	4.88	4.89
K7	323 Decide on changes in scheduled activities	4.97	5.24	4.92	4.88	4.92	4.99
K37	353 Update war plans for the region	4.72	4.55	4.63	5.02	4.70	4.50
K40	356 Monitor property management of the unit	4.61	5.09	5.08	4.38	4.49	4.32

K. Manage resources

CRITICAL TASKS (i.e., mean significance rating = or > 5, for 1 or more ranks)
 THAT ARE RELATIVELY STABLE ACROSS RANKS (i.e., means differ by < 1.00)

PART OF POSITION

- 1 - INSIGNIFICANT
- 2 - SLIGHTLY SIGNIFICANT
- 3 - SOMEWHAT SIGNIFICANT
- 4 - MODERATELY SIGNIFICANT
- 5 - QUITE SIGNIFICANT
- 6 - HIGHLY SIGNIFICANT
- 7 - EXTREMELY SIGNIFICANT

Global Duty D: PROVIDE DIRECTION
 (Duties L-T, 204 tasks)

Mean "Part of Position" rating

L. Perform/supervise administrative functions

Task #	Task	ALL	LTS	CPT	MAJ	LTC	COL
L13 369	Edit and proofread written materials	5.31	5.40	5.37	5.34	5.39	5.00
L14 370	Supervise completion of reports	5.16	5.30	5.23	5.16	5.16	5.01
L24 380	Approve paperwork for your unit	5.16	4.69	4.92	4.98	5.27	5.46
L20 376	Write information papers	4.98	4.45	4.95	5.09	5.08	4.88
L15 371	Write status reports	4.86	5.00	4.97	4.91	4.87	4.52
L5 361	Establish SOPs for your unit	4.85	5.26	5.01	4.76	4.73	4.50
L7 363	Revise SOPs	4.70	5.19	4.84	4.65	4.47	4.23

M. Coordinate with others outside the unit

M1 383	Respond to the needs of other units	5.18	4.81	5.21	5.22	5.28	5.22
M5 387	Coordinate with other branches within the Army	4.91	4.84	4.85	5.00	4.80	5.04
M11 393	Develop network with others throughout the Army	4.87	4.35	4.71	4.89	4.88	5.16
M12 394	Perform duties of safety officer	4.63	5.08	4.75	4.12	4.54	4.29

Task # Task			ALL	:	LTS	CPT	MAJ	LTC	COL
N. Supervise others	N9	411 Supervise soldiers who supervise others	5.52	:	5.78	5.42	5.43	5.55	5.43
	N1	403 Supervise U.S. soldiers	5.49	:	5.84	5.46	5.33	5.50	5.41
	N5	407 Supervise male soldiers	5.39	:	5.78	5.36	5.18	5.36	5.33
	N3	405 Supervise U.S. civilians	5.17	:	4.74	4.64	4.97	5.22	5.59
	N6	408 Supervise female soldiers	5.06	:	5.25	4.94	4.82	5.15	5.16
	N7	409 Supervise personnel attached to the unit	4.84	:	5.16	4.80	4.76	4.80	4.64
	N16	418 Supervise subordinates in a variety of MOS/Specialty Areas	4.75	:	5.05	4.79	4.66	4.75	4.62
O. Maintain 2-way information exchange with subordinates	O11	433 Communicate the intent of the commander	5.45	:	5.46	5.36	5.34	5.51	5.55
	O2	424 Encourage upward communication	5.45	:	5.42	5.25	5.31	5.54	5.65
	O3	425 Encourage downward communication	5.41	:	5.38	5.25	5.26	5.47	5.63
	O1	423 Establish communication channels	5.39	:	5.39	5.23	5.29	5.44	5.57
	O5	427 Encourage subordinates to provide constructive criticism	5.35	:	5.32	5.21	5.25	5.42	5.50
	O4	426 Encourage subordinates to provide positive feedback	5.34	:	5.30	5.20	5.23	5.39	5.53
	O8	430 Tell subordinates what their critical tasks are	5.15	:	5.14	5.06	5.15	5.20	5.18
	O10	432 Provide subordinates with guidelines to follow	5.08	:	5.11	4.94	5.09	5.08	5.16
	O6	428 Evaluate communication channels	5.06	:	4.93	4.88	4.99	5.12	5.25
	O15	437 Keep soldiers informed about the current situation	4.98	:	5.15	4.97	4.89	4.92	4.88
	O19	441 Act as senior advisor	4.97	:	4.64	4.81	5.12	5.02	5.16
	O20	442 Ask subordinates to teach you what you don't know	4.63	:	5.26	4.67	4.45	4.34	4.50

P. Maintain 2-way information exchange with superiors

Task #	Task	ALL	LTS	CPT	MAJ	LTC	COL
P6	449 Explain the "why" of things to higher-ranked individuals	5.13	5.12	5.06	5.16	5.17	5.11
P1	444 Provide positive feedback to higher-ranked individuals	5.13	5.11	5.06	5.05	5.16	5.27
P9	452 Act as the commander's "eyes and ears"	5.11	5.05	5.02	5.18	5.09	5.19
P10	453 Keep the commander informed about people problems	4.97	5.01	5.03	4.88	4.95	4.98
P17	460 On a regular basis, respond to direct taskings from several individuals	4.94	5.04	4.85	4.91	4.96	4.97
P12	455 Influence the philosophy of the commander	4.89	4.53	4.58	4.90	5.00	5.16
P15	458 Represent the soldiers to the commander	4.70	5.02	4.65	4.48	4.67	4.68

Task # Task		ALL	LTS	CPT	MAJ	LTC	COL
Q. Monitor and evaluate performance	Q24 484	Assess whether overall unit mission is being accomplished	5.42	5.08	5.34	5.25	5.61 5.61
	Q31 491	Assess potential of subordinates	5.38	5.29	5.03	5.22	5.58 5.63
	Q32 492	Write EERs	5.25	5.51	5.16	5.18	5.30 5.13
	Q25 485	Evaluate group/unit readiness for combat	5.19	5.10	5.09	5.34	5.43 4.87
	Q36 496	Endorse performance ratings	5.18	4.97	4.88	5.03	5.19 5.46
	Q35 495	Review performance ratings	5.14	5.01	4.80	4.89	5.14 5.48
	Q1 461	Monitor tasks being performed at the same time at different locations	5.04	5.04	4.86	5.01	5.16 5.09
	Q20 480	Evaluate group performance	4.94	4.97	4.91	4.76	5.04 4.98
	Q10 470	Check that subordinates accomplish assigned tasks	4.93	5.33	4.94	4.83	4.91 4.71
	Q26 486	Inspect work upon its completion by subordinates	4.93	5.15	5.03	4.91	5.00 4.83
	Q5 465	Monitor safety practices in subordinate leader's unit	4.78	5.11	4.76	4.50	4.89 4.60
	Q6 466	Monitor maintenance in subordinate leaders' units	4.66	5.13	4.48	4.70	4.70 4.14
R. Conduct counseling	R6 504	Communicate performance standards to subordinates	5.13	5.26	5.01	5.03	5.20 5.13
	R1 499	Counsel male soldiers on their performance	4.93	5.27	4.86	4.79	4.99 4.77
	R4 502	Document performance problems of subordinates	4.48	5.05	4.53	4.39	4.37 4.20
	R5 503	Write counseling statements	4.26	5.01	4.45	4.04	4.00 3.84

Task # Task			ALL	:	LTS	CPT	MAJ	LTC	COL
S. Establish direction of your unit/element	S13	535 Ensure readiness of your unit/element	5.48	:	5.69	5.45	5.22	5.60	5.41
	S6	528 Establish standards for your unit/element	5.40	:	5.27	5.24	5.22	5.50	5.65
	S11	533 Determine the critical tasks of the overall mission	5.36	:	5.27	5.24	5.29	5.47	5.47
	S8	530 Enforce standards for your unit/element	5.33	:	5.32	5.27	5.15	5.46	5.44
	S1	523 Lead the unit/element without much direct supervision	5.31	:	5.20	5.31	5.18	5.34	5.46
	S3	525 Communicate mission purpose	5.29	:	5.22	5.10	5.19	5.39	5.47
	S5	527 Establish long-term unit/element goals	5.28	:	5.05	5.14	5.14	5.39	5.52
	S7	529 Clarify standards for your unit/element	5.21	:	5.17	5.12	5.03	5.34	5.33
	S4	526 Establish short-term unit/element objectives	5.18	:	5.13	5.14	5.10	5.20	5.29
	S9	531 Identify alternative courses of action	5.16	:	5.09	5.14	5.10	5.22	5.25
	S12	534 Determine task milestones	5.12	:	4.92	5.09	5.05	5.24	5.22
	S10	532 Determine how to accomplish the mission according to doctrine	5.03	:	5.08	5.05	5.06	5.00	4.98
	S2	524 Establish the mission for the subordinate unit	5.00	:	4.95	4.93	4.84	5.09	5.12
* T24 559 Advise the staff			5.26	:	4.79	5.03	5.31	5.36	5.40

* T. Provide input for the direction of the larger organization

APPENDIX B

CRITICAL TASKS (i.e., mean significance rating = or > 5, for 1 or more ranks)
THAT ARE NOT RELATIVELY STABLE ACROSS RANKS (i.e., means differ by > 1.00)

PART OF POSITION

- 1 - INSIGNIFICANT
- 2 - SLIGHTLY SIGNIFICANT
- 3 - SOMEWHAT SIGNIFICANT
- 4 - MODERATELY SIGNIFICANT
- 5 - QUITE SIGNIFICANT
- 6 - HIGHLY SIGNIFICANT
- 7 - EXTREMELY SIGNIFICANT

Global Duty A: TRAIN, TEACH, & DEVELOP
(Duties A-E, 146 tasks)

Mean "Part of Position" rating

Task #	Task	ALL : LTS CPT MAJ LTC COL					
		ALL	LTS	CPT	MAJ	LTC	COL
E15	117 Obtain operation order	4.94	5.55	5.11	4.98	4.42	3.83
E13	115 Decide on course of action for the battle plan	4.93	5.27	5.05	4.91	4.90	4.26
E33	135 Direct communications in the field	4.89	5.19	4.63	4.47	4.10	3.45
E37	139 Issue warning orders	4.76	5.27	4.85	4.71	4.63	3.78
E27	129 Position the elements of your unit	4.75	5.43	4.93	4.56	4.33	3.87
E26	128 Assist commander with maneuver of the unit	4.60	5.29	4.51	4.95	3.96	2.91
E19	119 Take charge of tactics in the field	4.58	5.21	4.87	4.24	4.32	3.58
E25	127 Prepare the unit to move out	4.57	5.33	4.77	4.46	3.77	3.27
E1	103 Lead troops into combat-type situations	4.56	5.06	4.92	4.24	4.27	3.81
E18	120 Direct tactical security in the field	4.53	5.16	4.75	4.41	4.15	3.42
E24	126 Set up command post	4.50	5.03	4.57	4.67	4.21	3.49
E34	136 Monitor the radio	4.22	5.18	4.50	3.96	3.37	2.72
E23	125 Provide combat intelligence information	4.17	5.03	4.58	4.01	3.49	2.88
E21	123 Supervise reconnaissance efforts	4.15	5.11	4.50	3.85	3.56	2.74

E. Train in the field to enter combat

CRITICAL TASKS (i.e., mean significance rating = or > 5, for 1 or more ranks)
 THAT ARE NOT RELATIVELY STABLE ACROSS RANKS (i.e., means differ by > 1.00)

PART OF POSITION

- 1 - INSIGNIFICANT
- 2 - SLIGHTLY SIGNIFICANT
- 3 - SOMEWHAT SIGNIFICANT
- 4 - MODERATELY SIGNIFICANT
- 5 - QUITE SIGNIFICANT
- 6 - HIGHLY SIGNIFICANT
- 7 - EXTREMELY SIGNIFICANT

Global Duty B: MOTIVATE
 (Duties F-J, 170 tasks)

Mean "Part of Position" rating

Task #	Task	ALL	LTS	CPT	MAJ	LTC	COL
* F13	159 Motivate soldiers to perform maintenance	4.77	5.28	4.98	4.45	4.63	4.13
F10	156 Keep soldiers motivated under sleep deprivation conditions	4.50	5.10	4.67	4.35	4.25	3.57
* G4	163 Direct/lead from a forward position in the battle	4.60	5.16	5.03	4.31	4.27	3.78
* H23	224 Conduct memorial services for unit's dead	4.91	4.01	4.96	5.04	5.30	4.70
* I26	279 Give verbal reprimand	4.29	5.00	4.36	4.10	4.12	3.92
I8	261 Recommend awards for civilians	4.90	4.12	4.28	4.72	5.05	5.35
* J4	287 Ensure that rations are issued	4.60	5.13	4.63	4.51	4.41	3.70

* Individual Duties

- F. Motivate others (the what)
- G. Motivate others (the how)
- H. Develop unit cohesion
- I. Reward and discipline subordinates
- J. Take care of soldiers

CRITICAL TASKS (i.e., mean significance rating = or > 5, for 1 or more ranks)
 THAT ARE NOT RELATIVELY STABLE ACROSS RANKS (i.e., means differ by > 1.00)

PART OF POSITION

- 1 - INSIGNIFICANT
- 2 - SLIGHTLY SIGNIFICANT
- 3 - SOMEWHAT SIGNIFICANT
- 4 - MODERATELY SIGNIFICANT
- 5 - QUITE SIGNIFICANT
- 6 - HIGHLY SIGNIFICANT
- 7 - EXTREMELY SIGNIFICANT

Global Duty C: RESOURCE
 (Duty K, 40 tasks)

Mean "Part of Position" rating

Task #	Task	ALL	LTS	CPT	MAJ	LTC	COL
K18 334	Make duty assignments for officers	4.80	3.58	4.39	4.67	5.14	4.90

K. Manage resources

CRITICAL TASKS (i.e., mean significance rating = or > 5, for 1 or more ranks)
THAT ARE NOT RELATIVELY STABLE ACROSS RANKS (i.e., means differ by > 1.00)

Global Duty D: PROVIDE DIRECTION
(Duties L-T, 204 tasks)

Mean "Part of Position" rating

Task #	Task	ALL	LTS	CPT	MAJ	LTC	COL
* M10 392	Develop contacts with organizations outside the Army	4.75	3.99	4.61	4.73	4.80	5.01
* N10 412	Supervise subordinates who are older than you	4.68	5.54	4.98	4.36	4.30	4.11
N11 413	Supervise subordinates who are more experienced than you	4.55	5.46	4.82	4.12	4.09	4.03
N20 422	Supervise a greater number of civilians than military	4.53	3.24	4.01	4.48	4.54	5.08
* P5 448	Provide superiors with information about the enemy situation	4.56	5.13	4.62	4.67	4.31	3.88
* Q33 493	Write OERs	5.42	3.72	5.11	5.30	5.62	5.66
Q37 497	Act as second-level signer for evaluations (OERS, GPASSs, etc.)	5.14	4.17	4.48	4.88	5.34	5.50
Q34 494	Write civilian performance appraisals	4.91	4.08	4.29	4.83	4.97	5.26
* T7 542	Make policy decisions	4.52	3.71	3.84	4.18	4.70	5.08

Individual Duties

- M. Coordinate with others outside the unit
- N. Supervise others
- P. Maintain 2-way information exchange with superiors
- Q. Monitor and evaluate performance
- T. Provide input for the direction of the larger organization

PART OF POSITION

- 1 - INSIGNIFICANT
- 2 - SLIGHTLY SIGNIFICANT
- 3 - SOMEWHAT SIGNIFICANT
- 4 - MODERATELY SIGNIFICANT
- 5 - QUITE SIGNIFICANT
- 6 - HIGHLY SIGNIFICANT
- 7 - EXTREMELY SIGNIFICANT

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THE ARMY LEADER REQUIREMENTS TASK ANALYSIS:

FAMILY ISSUES RESULTS

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THE ARMY LEADER REQUIREMENTS TASK ANALYSIS: FAMILY ISSUES RESULTS

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THE ARMY LEADER REQUIREMENTS SURVEY: FAMILY ISSUE RESULTS

INTRODUCTION

This paper presents a subset of results from the Army Leader Requirements Survey dealing with family issues. The Leader Requirements Survey was developed to identify the leadership tasks performed by commissioned officers, second lieutenant through colonel, and noncommissioned officers, sergeant through command sergeant major. It was designed to provide the Army with information for: (a) refinement of its multi-level leadership education and training programs, (b) integration of leadership programs for commissioned and noncommissioned officers, and (c) leadership programs that represent the progressive and sequential nature of Army leadership. The survey was conducted in the spring and summer of 1987.

Five publications are available which partially document the leader requirements research to date. The first is a U.S. Army Research Institute research product which contains the commissioned and noncommissioned officer forms of the Leader Requirements Survey, including the entire task list, the answer booklets, and the instructions (Steinberg, 1987b). The next three documents are conference papers, as follows. Steinberg (1987, May) addresses the questions most frequently asked about the leader requirements task analysis (e.g., why a leadership task analysis is needed, why existing task lists were not used, why behaviors rather than competencies were stressed). The Steinberg, van Rijn, and Hunter (1986,, November) paper discusses some of the ways the traditional task analytic approach was adapted for this effort. Topics included are: delineation of the leadership portion of the job, duty headings, task structure, task format, task specificity, task overlap, and task balance. Finally, the Steinberg and Leaman (1987, October) paper looks at the commissioned officer data from the Army leader requirements task analysis from the perspective of a technical/conceptual/interpersonal model of leadership as a function of organizational level. All three of these conference papers are compiled in Steinberg, 1987a. The last publication documents preliminary commissioned officer results (Steinberg & Leaman, 1988). It identifies the tasks that were rated critical for one or more commissioned officer tasks and provides results of the knowledge and abilities items and selected other questions.

The Leader Requirements Survey includes 560 leadership tasks. Ten of these are on family-related issues (see Figure 1). Respondents were asked to rate only those tasks which they do in their current assignment, on the following 7-point scale:

Figure 1

Family Tasks From Leader Requirements Survey

- 294—Advise subordinates on how to deal with spouses
- 295—Conduct "We Care Day" for dependents
- 296—Ensure that spouses are aware of schedule for upcoming FTXs
- 297—Respond to concerns of soldiers' parents
- 301—Provide survivor benefits information to soldiers/families
- 511—Advise spouses of soldiers
- 512—Explain the soldiers' jobs to their families
- 513—Counsel soldiers on family problems
- 515—Counsel soldiers on child abuse
- 516—Counsel soldiers on spouse abuse

Part of Position Scale

- 1 - Insignificant
- 2 - Slightly Significant
- 3 - Somewhat Significant
- 4 - Moderately Significant
- 5 - Quite Significant
- 6 - Highly Significant
- 7 - Extremely Significant

The section which follows presents the responses of 5033 commissioned officers and 5945 noncommissioned officers to the 10-item subset of family-related tasks on the Leader Requirements Survey.

FAMILY ISSUES RESULTS

The results for the 10 family-related tasks are presented in terms of the mean "Part of Position" rating for each task and the percent of respondents performing each task. In order to identify possible rank differences, the mean rating and percent performing are broken out by rank for both commissioned officers and noncommissioned officers. Then these results are further broken down to distinguish possible difference by type of organization. Thus, the results are presented below in four parts: (1) commissioned officers, by rank, (2) noncommissioned officers, by rank, (3) commissioned officers, by rank and type of organization, and (4) noncommissioned officers, by rank and type of organization. Table 1 presents the number of commissioned officers by rank and type of organization, and Table 2 presents the number of NCO by rank and type of organization.

1. Commissioned officers, by rank

Table 3 shows the mean "Part of Position" ratings and the percent of commissioned officers performing for each of the 10 family-related tasks in the Leader Requirements Survey. Note that the mean ratings in this table (which, remember, were provided only by those officers who do these tasks) range from 3.25 to 4.52. Colonels gave the lowest or next-to-lowest rating for 9 of the 10 tasks and captains gave the highest or next-to-highest rating for 8 of the 10 tasks. With respect to percent performing, generally less than 30% of the officers reported performing the family tasks. The exceptions were lieutenants and captains, for two of the tasks (#513 and #294).

2. Noncommissioned officers, by rank

Table 4 contains the mean "Part of Position" ratings and the percent performing for the noncommissioned officers for each

Table 1
Number of Officers by Rank and Type of Organization

NUMBER OF OFFICERS*					
RANK	:	TOE	TDA	DON'T KNOW:	TOTAL
LTS	:	463	167	52	682
CPT	:	347	522	63	932
MAJ	:	339	825	49	1213
LTC	:	299	890	47	1236
COL	:	116	762	34	912
TOTAL		1564	3166	245	4975

*NOTE: 58 officers did not respond to this question.

Table 2
Number of NCO by Rank and Type of Organization

NUMBER OF NCO*

RANK	:	TOE	TDA	DON'T KNOW:	:	TOTAL
E5	:	682	275	300	:	1257
E6	:	720	488	179	:	1387
E7	:	607	679	67	:	1353
E8	:	447	611	31	:	1089
E9	:	201	415	17	:	633
TOTAL		2657	2468	594		5719

*NOTE: 226 NCO did not respond to this question.

Table 3
Commissioned Officer Results, by Rank

DATA FROM LEADER REQUIREMENTS SURVEY

ENTIRE OFFICER SAMPLE		Mean Rating*				
Task#	Task	LTS	CPT	Rank	LTC	COL
				MAJ		
294	Advise subordinates on how to deal with spouses	4.15	4.20	3.80	4.06	3.66
295	Conduct "We Care Day" for dependents	3.70	3.72	3.91	3.99	3.64
296	Ensure that spouses are aware of schedule for upcoming FTXs	4.34	4.38	4.19	4.51	3.93
297	Respond to concerns of soldiers' parents	4.21	4.48	4.13	4.35	4.13
301	Provide survivor benefits information to soldiers/families	3.57	3.47	3.27	3.39	3.25

		Percent Performing				
Task#	Task	LTS	CPT	MAJ	LTC	COL
294	Advise subordinates on how to deal with spouses	41.0	35.9	24.6	29.3	28.1
295	Conduct "We Care Day" for dependents	15.3	16.8	10.2	16.4	15.2
296	Ensure that spouses are aware of schedule for upcoming FTXs	25.0	21.3	15.2	18.1	16.3
297	Respond to concerns of soldiers' parents	25.4	26.7	14.4	22.6	21.3
301	Provide survivor benefits information to soldiers/families	17.6	17.5	10.6	13.7	14.9

*Scale is:	PART OF POSITION	SAMPLE SIZE
	1 - Insignificant	693 1LT & 2LT
	2 - Slightly significant	940 CPT
	3 - Somewhat significant	1232 MAJ
	4 - Moderately significant	1245 LTC
	5 - Quite significant	923 COL
	6 - Highly significant	5033 Total
	7 - Extremely significant	(continued)

Table 3 (continued)

DATA FROM LEADER REQUIREMENTS SURVEY

ENTIRE OFFICER SAMPLE

Mean Rating

Task#	Task	LTS	CPT	Rank		
				MAJ	LTC	COL
511	Advise spouses of soldiers	3.33	3.89	3.62	3.57	3.47
512	Explain the soldiers' jobs to their families	3.39	3.45	3.42	3.55	3.58
513	Counsel soldiers on family problems	4.22	4.52	4.02	3.91	3.62
515	Counsel soldiers on child abuse	4.06	4.27	4.01	3.82	3.51
516	Counsel soldiers on spouse abuse	4.09	4.32	4.05	3.84	3.62

Percent Performing

Task#	Task	LTS	CPT	Rank		
				MAJ	LTC	COL
511	Advise spouses of soldiers	21.1	25.1	16.3	21.6	20.3
512	Explain the soldiers' jobs to their families	18.3	19.5	12.5	19.2	20.3
513	Counsel soldiers on family problems	42.3	34.9	23.4	29.1	26.2
515	Counsel soldiers on child abuse	23.8	25.9	15.0	20.7	19.0
516	Counsel soldiers on spouse abuse	25.4	27.3	15.7	21.1	19.3

Table 4
Noncommissioned Officer Results, by Rank

DATA FROM LEADER REQUIREMENTS SURVEY

ENTIRE NCO SAMPLE		Mean Rating				
Task#	Task	E5	E6	Rank	E8	E9
				E7		
294	Advise subordinates on how to deal with spouses	4.66	4.65	4.86	5.07	5.03
295	Conduct "We Care Day" for dependents	4.77	4.69	4.82	5.09	5.34
296	Ensure that spouses are aware of schedule for upcoming FTXs	5.24	5.13	5.16	5.46	5.36
297	Respond to concerns of soldiers' parents	5.06	5.07	5.16	5.59	5.44
301	Provide survivor benefits information to soldiers/families	4.93	4.94	5.04	5.13	5.16

		Percent Performing				
Task#	Task	E5	E6	Rank	E8	E9
				E7		
294	Advise subordinates on how to deal with spouses	32.2	36.6	40.5	45.6	42.7
295	Conduct "We Care Day" for dependents	17.0	18.9	20.0	24.6	25.8
296	Ensure that spouses are aware of schedule for upcoming FTXs	25.0	25.1	26.8	29.2	24.2
297	Respond to concerns of soldiers' parents	23.7	25.2	29.4	37.7	33.2
301	Provide survivor benefits information to soldiers/families	21.1	24.3	28.0	32.2	27.6

(CONTINUED)

SAMPLE SIZE

1352 E5
1459 E6
1387 E7
1103 E8
644 E9
5945 Total

Table 4 (continued)

DATA FROM LEADER REQUIREMENTS SURVEY

ENTIRE NCO SAMPLE		Mean Rating				
Task#	Task	E5	E6	Rank	E8	E9
				E7		
511	Advise spouses of soldiers	4.58	4.56	4.44	4.69	4.95
512	Explain the soldiers' jobs to their families	4.54	4.59	4.60	4.79	4.95
513	Counsel soldiers on family problems	4.93	5.12	5.16	5.30	5.23
515	Counsel soldiers on child abuse	4.99	5.20	5.19	5.30	5.31
516	Counsel soldiers on spouse abuse	5.02	5.19	5.25	5.34	5.34

		Percent Performing				
Task#	Task	E5	E6	Rank	E8	E9
				E7		
511	Advise spouses of soldiers	18.9	23.4	26.0	34.5	32.3
512	Explain the soldiers' jobs to their families	19.8	23.1	26.0	33.6	30.3
513	Counsel soldiers on family problems	32.2	37.4	45.3	54.8	52.0
515	Counsel soldiers on child abuse	26.5	30.6	35.0	42.2	38.2
516	Counsel soldiers on spouse abuse	26.0	31.0	35.7	44.2	39.6

of the 10 family-related tasks. The mean ratings for noncommissioned officers on the family-related tasks range from 4.44 to 5.59. For each of the 10 tasks, E8 and E9 gave the highest ratings and E5, E6, and E7 gave the lowest. With respect to percent performing, half of the cells contain percents less than 30% and half contain percents greater than 30%. Of the family tasks, those performed by most by noncommissioned officers are Tasks #294, #513, #515, and #516.

3. Commissioned officers, by rank and type of organization

Appendix A contains the mean "Part of Position" ratings and percent performing for the commissioned officer ranks by type of organization. Part A contains these results for TOE organizations and Part B contains these results for TDA organizations. There is a clear organizational effect on the mean ratings and percent performing. Ninety percent of the mean ratings in each cell (task by rank) are higher for TOE organizations than for TDA organizations. Also, in 100% of the cells, the percent performing is higher for TOE than for TDA organizations. (See Figure 2 for an illustration of the TOE/TDA difference in percent of commissioned officers performing one family tasks.)

4. Noncommissioned officers, by rank and type of organization

Appendix B contains the mean "Part of Position" ratings and percent performing for the noncommissioned officer ranks by type of organization, Part A for TOE organizations and Part B for TDA organizations. Again, there is an organizational effect on the mean ratings and percent performing. Eighty percent of the mean ratings in each cell (task by rank) are higher for TOE organizations than for TDA organizations. Also, in 98% of the cells, the percent performing is higher for TOE than for TDA organizations. (See Figure 3 for an illustration of the TOE/TDA difference in percent of noncommissioned officers performing one of the family tasks.)

CONCLUSIONS

The following general conclusions can be drawn from the data presented above:

(1) More noncommissioned officers report performing these tasks than do commissioned officers.

(2) Of those who perform these tasks, noncommissioned officers rate them more significant a part of their job than do commissioned officers.

(3) Commissioned and noncommissioned officers in TOE

Figure 2.

Percent of Officers Performing Family Tasks, by Grade and Type of Organization

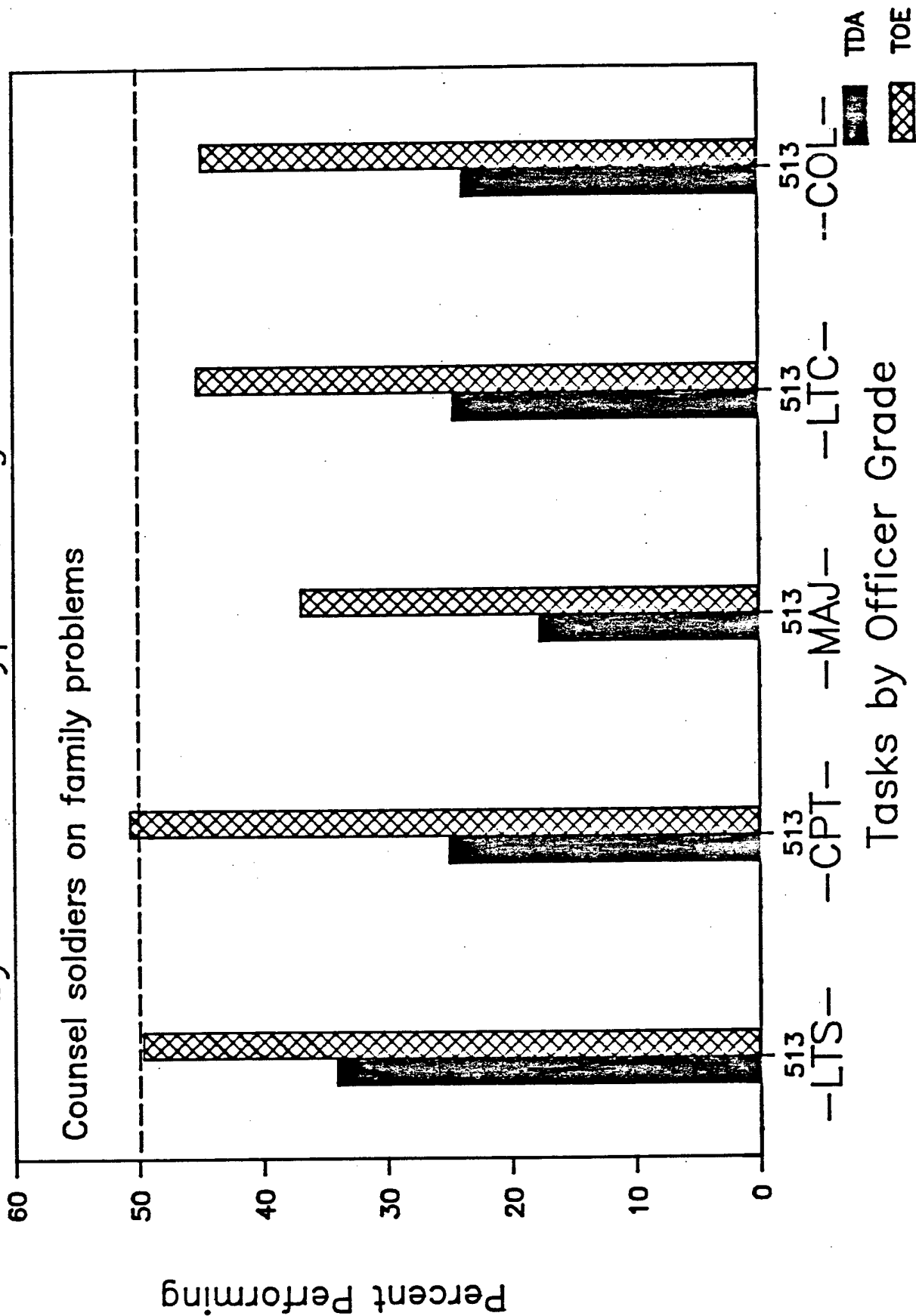
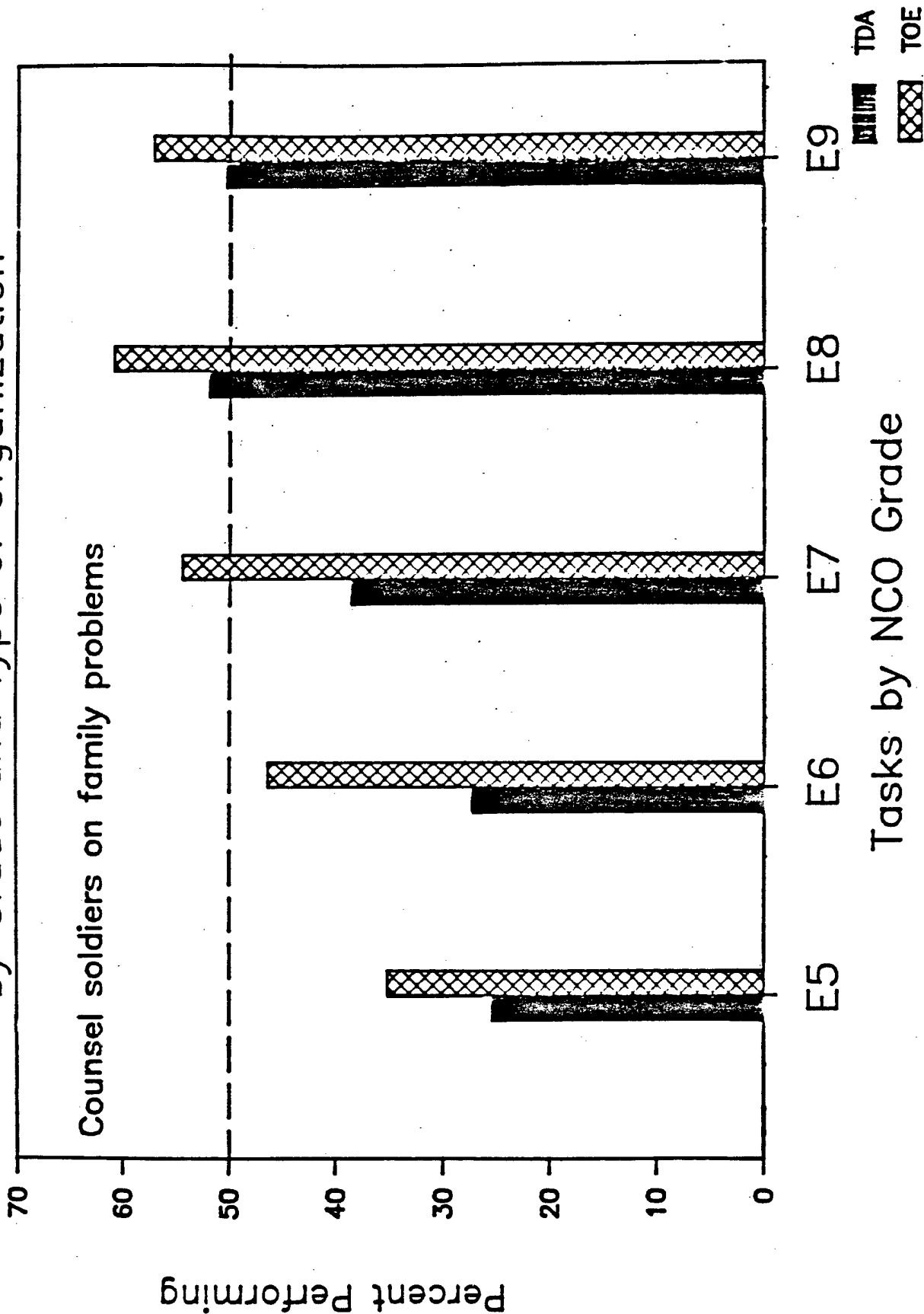


Figure 3.

Percent of NCO Performing Family Tasks, by Grade and Type of Organization



than are those in TDA organizations.

(3) E8 and E9 rate these tasks higher than do lower-level noncommissioned officers.

(4) Commissioned and noncommissioned officers in TOE organizations are more likely to rate the family-related tasks as a more significant part of their jobs than are those in TDA organizations.

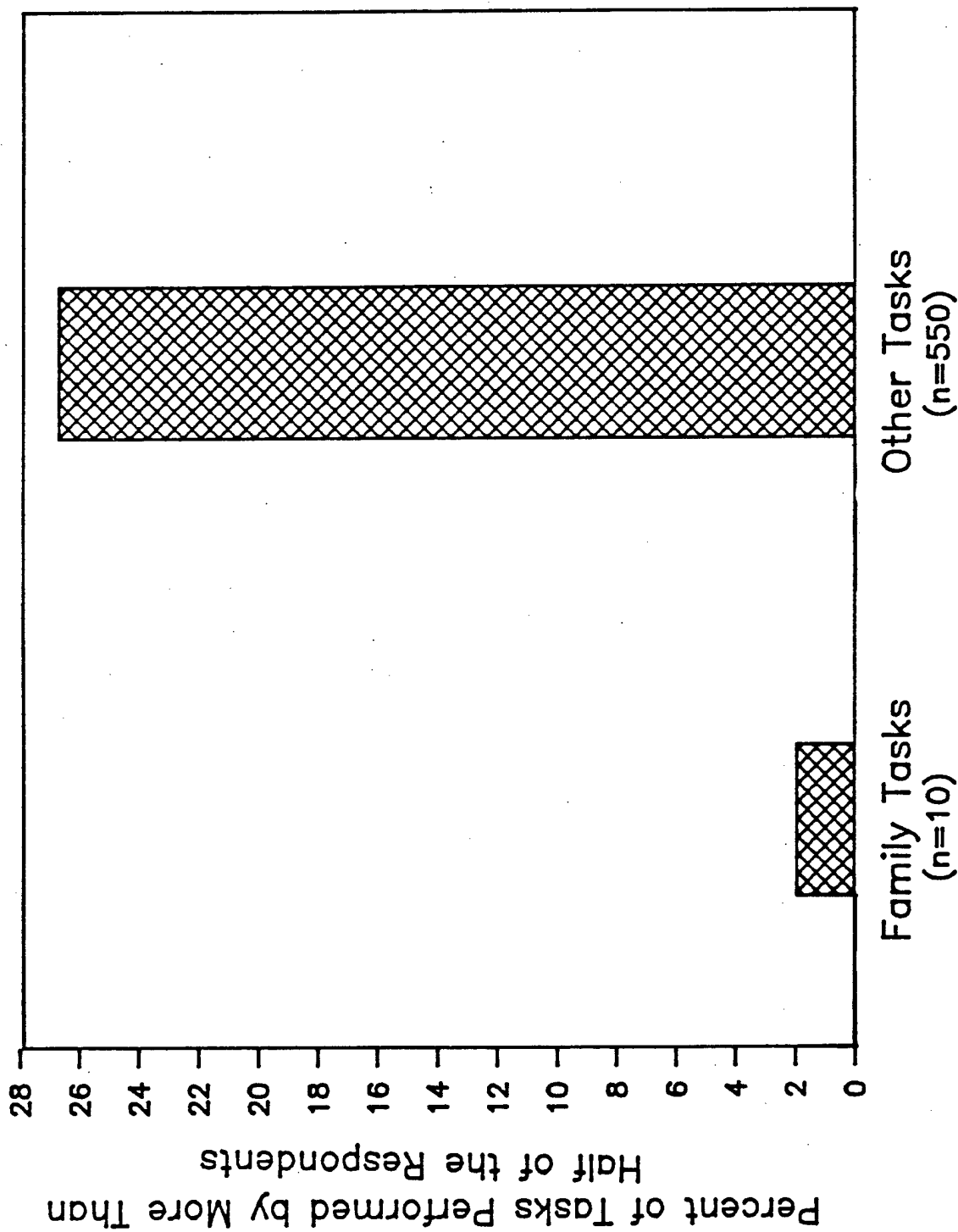
In order to put these conclusions in perspective with those generated for the entire task list (see Steinberg & Leaman, 1988), note that:

- The percent of tasks performed by more than half of the respondents is considerably lower for the family-related tasks than for the remaining tasks (Figure 4).
- Thirty-six percent of all the tasks were rated 5 or above by the commissioned officers who do them in one or more ranks. None of these were family-related tasks.
- Seventy-seven percent of all the tasks were rated 5 or above by the noncommissioned officers who do them in one or more ranks. For the family-related tasks, 80% were.

The percent performing family tasks, therefore, is relatively lower than for the remaining leadership tasks for both commissioned and noncommissioned officers. Also, there is a difference in how critical a part of the job they consider them, with noncommissioned officers considering somewhat more critical than commissioned officers. Thus the data presented suggest that leadership behaviors impacting on family issues may be lower in priority than other leadership tasks.

Figure 4.

PERFORMANCE OF LEADERSHIP TASKS



REFERENCES

- Steinberg, A. G. (1987a). Leader requirements research: Current status, (LMTA Working Paper #87-14). Alexandria, VA: U.S. Army Research Institute.
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Appendix A: Commissioned Officer Results, by Rank and Type of Organization

DATA FROM LEADER REQUIREMENTS SURVEY

Part A: OFFICER SAMPLE - TOE ONLY

Mean Rating

Task#	Task	LTS	CPT	Rank		LTC	COL
				MAJ			
294	Advise subordinates on how to deal with spouses	4.22	4.37	4.16		4.23	3.78
295	Conduct "We Care Day" for dependents	3.76	4.11	4.37		4.38	3.86
296	Ensure that spouses are aware of schedule for upcoming FTXs	4.47	4.69	4.71		5.22	5.05
297	Respond to concerns of soldiers' parents	4.21	4.76	4.27		4.72	4.46
301	Provide survivor benefits information to soldiers/families	3.60	3.64	3.68		3.60	3.18

Percent Performing

Task#	Task	LTS	CPT	Rank		LTC	COL
				MAJ			
294	Advise subordinates on how to deal with spouses	48.6	53.9	38.9		47.5	47.4
295	Conduct "We Care Day" for dependents	18.4	29.1	18.3		31.8	31.0
296	Ensure that spouses are aware of schedule for upcoming FTXs	34.1	42.7	36.9		48.2	49.1
297	Respond to concerns of soldiers' parents	30.7	42.4	26.8		46.8	48.3
301	Provide survivor benefits information to soldiers/families	20.7	25.9	15.6		25.1	24.1

Appendix A, Part A (continued)

DATA FROM LEADER REQUIREMENTS SURVEY

OFFICER SAMPLE - TOE ONLY

Mean Rating

Task#	Task	LTS	CPT	Rank	LTC	COL
				MAJ		
511	Advise spouses of soldiers	3.40	4.04	3.82	3.69	3.76
512	Explain the soldiers' jobs to their families	3.49	3.71	3.81	3.88	4.13
513	Counsel soldiers on family problems	4.23	4.74	4.07	4.13	4.04
515	Counsel soldiers on child abuse	4.05	4.67	4.06	3.98	3.81
516	Counsel soldiers on spouse abuse	4.11	4.63	4.06	3.97	3.93

Percent Performing

Task#	Task	LTS	CPT	Rank	LTC	COL
				MAJ		
511	Advise spouses of soldiers	25.7	38.9	25.1	36.8	32.8
512	Explain the soldiers' jobs to their families	22.7	30.5	21.5	37.8	33.6
513	Counsel soldiers on family problems	49.7	50.7	36.9	45.2	44.8
515	Counsel soldiers on child abuse	28.5	38.9	23.6	35.8	36.2
516	Counsel soldiers on spouse abuse	30.5	40.1	25.1	36.5	36.2

Appendix A, Part B

DATA FROM LEADER REQUIREMENTS SURVEY

Part B: OFFICER SAMPLE - TDA ONLY

Mean Rating

Task#	Task	LTS	CPT	Rank	LTC	COL
				MAJ		
294	Advise subordinates on how to deal with spouses	4.02	3.90	3.61	3.99	3.65
295	Conduct "We Care Day" for dependents	3.42	2.95	3.67	3.75	3.56
296	Ensure that spouses are aware of schedule for upcoming FTXs	2.77	3.36	3.29	3.31	3.22
297	Respond to concerns of soldiers' parents	4.20	4.02	4.07	4.07	4.01
301	Provide survivor benefits information to soldiers/families	3.52	2.97	3.12	3.25	3.32

Percent Performing

Task#	Task	LTS	CPT	Rank	LTC	COL
				MAJ		
294	Advise subordinates on how to deal with spouses	27.5	24.8	18.4	24.2	25.6
295	Conduct "We Care Day" for dependents	11.4	10.1	6.5	11.8	12.9
296	Ensure that spouses are aware of schedule for upcoming FTXs	7.8	9.1	6.3	8.7	11.7
297	Respond to concerns of soldiers' parents	18.0	17.4	9.0	15.4	17.6
301	Provide survivor benefits information to soldiers/families	15.0	12.0	8.2	10.2	13.4

Appendix A, Part B (continued)

DATA FROM LEADER REQUIREMENTS SURVEY

OFFICER SAMPLE - TDA ONLY

Mean Rating

Task#	Task	LTS	CPT	Rank	LTC	COL
				MAJ		
511	Advise spouses of soldiers	3.08	3.39	3.58	3.56	3.37
512	Explain the soldiers' jobs to their families	3.10	2.99	3.26	3.34	3.40
513	Counsel soldiers on family problems	4.30	4.14	4.10	3.85	3.50
515	Counsel soldiers on child abuse	4.03	3.60	4.05	3.78	3.39
516	Counsel soldiers on spouse abuse	3.97	3.84	4.13	3.85	3.48

Percent Performing

Task#	Task	LTS	CPT	Rank	LTC	COL
				MAJ		
511	Advise spouses of soldiers	15.0	15.9	12.4	17.0	18.6
512	Explain the soldiers' jobs to their families	12.0	13.2	8.2	13.6	18.4
513	Counsel soldiers on family problems	34.1	25.0	17.7	24.6	23.8
515	Counsel soldiers on child abuse	18.0	17.2	11.3	16.1	16.7
516	Counsel soldiers on spouse abuse	19.2	19.2	11.9	16.2	16.9

APPENDIX B: Noncommissioned Officer Results, by Rank and Type of Organization

DATA FROM LEADER REQUIREMENTS SURVEY

Part A: NCO SAMPLE - TOE ONLY

Mean Rating

Task#	Task	Rank				
		E5	E6	E7	E8	E9
294	Advise subordinates on how to deal with spouses	4.65	4.74	4.89	5.05	5.24
295	Conduct "We Care Day" for dependents	4.81	4.89	4.73	5.09	5.63
296	Ensure that spouses are aware of schedule for upcoming FTXs	5.28	5.31	5.18	5.54	5.79
297	Respond to concerns of soldiers' parents	4.97	5.19	5.20	5.61	5.57
301	Provide survivor benefits information to soldiers/families	4.99	5.08	5.13	4.99	5.52

Percent Performing

Task#	Task	Rank				
		E5	E6	E7	E8	E9
294	Advise subordinates on how to deal with spouses	41.9	46.4	52.6	52.8	48.3
295	Conduct "We Care Day" for dependents	19.6	23.2	28.0	31.3	34.3
296	Ensure that spouses are aware of schedule for upcoming FTXs	33.6	35.8	45.6	49.7	45.3
297	Respond to concerns of soldiers' parents	28.2	33.2	40.9	48.3	45.8
301	Provide survivor benefits information to soldiers/families	23.6	29.7	39.4	38.9	30.3

Appendix B, Part A (continued)

DATA FROM LEADER REQUIREMENTS SURVEY

NCO SAMPLE - TOE ONLY

Mean Rating

Task#	Task	E5	E6	Rank	E8	E9
				E7		
511	Advise spouses of soldiers	4.58	4.62	4.49	4.75	5.22
512	Explain the soldiers' jobs to their families	4.59	4.66	4.63	4.93	5.26
513	Counsel soldiers on family problems	4.88	5.19	5.31	5.36	5.42
515	Counsel soldiers on child abuse	4.95	5.25	5.32	5.28	5.49
516	Counsel soldiers on spouse abuse	4.96	5.25	5.37	5.30	5.48

Percent Performing

Task#	Task	E5	E6	Rank	E8	E9
				E7		
511	Advise spouses of soldiers	21.0	30.3	34.9	39.6	31.8
512	Explain the soldiers' jobs to their families	22.7	29.2	35.3	38.9	34.8
513	Counsel soldiers on family problems	35.3	46.5	54.5	60.9	57.2
515	Counsel soldiers on child abuse	29.8	39.6	44.2	47.7	42.3
516	Counsel soldiers on spouse abuse	29.0	40.6	45.5	49.4	44.8

Appendix B, Part B

DATA FROM LEADER REQUIREMENTS SURVEY

Part B: NCO SAMPLE - TDA ONLY

Mean Rating

Task#	Task	Rank				
		E5	E6	E7	E8	E9
294	Advise subordinates on how to deal with spouses	4.52	4.34	4.83	5.05	4.99
295	Conduct "We Care Day" for dependents	4.89	4.28	5.06	5.12	5.22
296	Ensure that spouses are aware of schedule for upcoming FTXs	4.62	4.44	5.18	5.23	4.90
297	Respond to concerns of soldiers' parents	5.35	4.80	5.14	5.57	5.44
301	Provide survivor benefits information to soldiers/families	4.88	4.71	4.93	5.25	5.00

Percent Performing

Task#	Task	Rank				
		E5	E6	E7	E8	E9
294	Advise subordinates on how to deal with spouses	24.4	24.6	30.5	41.4	40.5
295	Conduct "We Care Day" for dependents	10.2	12.5	13.3	19.8	21.2
296	Ensure that spouses are aware of schedule for upcoming FTXs	7.6	10.2	11.5	14.9	14.0
297	Respond to concerns of soldiers' parents	15.6	14.1	19.9	30.6	26.7
301	Provide survivor benefits information to soldiers/families	14.5	16.8	19.7	27.8	26.7

Appendix B, Part B (continued)

DATA FROM LEADER REQUIREMENTS SURVEY

NCO SAMPLE - TDA ONLY

Mean Rating

Task#	Task	Rank				
		E5	E6	E7	E8	E9
511	Advise spouses of soldiers	4.64	4.38	4.34	4.64	4.92
512	Explain the soldiers' jobs to their families	4.53	4.60	4.56	4.67	4.89
513	Counsel soldiers on family problems	4.83	4.86	4.97	5.25	5.15
515	Counsel soldiers on child abuse	4.94	4.96	5.04	5.31	5.25
516	Counsel soldiers on spouse abuse	4.88	5.03	5.10	5.38	5.29

Percent Performing

Task#	Task	Rank				
		E5	E6	E7	E8	E9
511	Advise spouses of soldiers	13.1	15.6	18.9	31.6	32.8
512	Explain the soldiers' jobs to their families	13.1	15.4	18.4	30.1	27.7
513	Counsel soldiers on family problems	25.5	27.3	38.6	52.0	50.4
515	Counsel soldiers on child abuse	17.1	19.9	29.0	39.6	36.4
516	Counsel soldiers on spouse abuse	17.8	20.5	28.9	41.2	37.6

Leadership and Management Technical Area Working Paper

88-08

THE LEADER REQUIREMENTS SURVEY: SUPPLEMENTARY NCO DATA

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THE LEADER REQUIREMENTS SURVEY: SUPPLEMENTARY NCO DATA

The following appendices supplement the noncommissioned officer leader requirements data presented in Steinberg and Leaman, 1988. These appendices contain the data on percent of noncommissioned officers performing each of the 560 leadership tasks (see Steinberg, 1987) by branch. Appendix A is for the combat arms, Appendix B for combat support, Appendix C for combat service support, and Appendix D for the remaining group.

In each of these appendices, the percent performing is denoted by an "X" for more than 66.6% and by an "*" for less than or equal to 33.3%. The absence of an "X" or "*" indicates between 33.3% and 66.6% perform the task. Next to the task numbers, themselves, is a "+" for those tasks that were rated most critical (i.e., one or more noncommissioned officer grades rated it 5 or above on the 7-point "Significant Part of the Job" scale) or a "-" for those tasks rated least critical (i.e., 3 or below on the same scale).

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- Steinberg, A. G. (1987). The leader requirements survey package, (ARI Research Product #87-21). Alexandria, VA: U.S. Army Research Institute.
- Steinberg, A. G. (1988). The Army leader requirements task analysis: Noncommissioned officer results, (LMTA Working Paper #88-07). Alexandria, VA: U.S. Army Research Institute.

APPENDIX A

NONCOMMISSIONED OFFICERS PERCENT PERFORMING BY COMBAT ARMS BRANCHES (WITH CROSSWALK FOR GRADE-CRITICAL TASKS)

For each task, the percent performing by Combat Arms branches is presented. At the same time, next to each of the task numbers in the left-hand column, a crosswalk is provided to the grade-critical tasks (based on mean ratings).

Legend

- + = Grade-Critical Task (i.e., tasks with mean rating greater than or equal to 5.00 on the Part of Position scale for one or more ranks).
- = Grade-Least-Critical Task (i.e., tasks with mean rating less than or equal to 3.00 on the Part of Position scale for one or more ranks).
- X = Percent Performing is greater than 66.6%.
- * = Percent Performing is less than or equal to 33.3%.

IMPORTANT: Tasks not marked with either an X or * are performed by 33.3% to 66.6% of the noncommissioned officers.

Branches

COMBAT ARMS

- 01 = INFANTRY
- 02 = ENGINEER
- 03 = FIELD ARTILLERY
- 04 = ADA/AD SYS MAINT
- 05 = ARMOR
- 16 = AVIATION OPERATION

COMBAT SUPPORT

- 07 = LAND COMBAT/AD SYS INTERMED MAINT/AMMO
- 08 = SIGNAL
- 10 = CHEMICAL
- 17 = MILITARY POLICE
- 18 = MILITARY INTELLIGENCE

COMBAT SERVICE SUPPORT

- 09 = ADMIN/BAND/PA/ADP/ RECRUITMENT AND REENLISTMENT
- 11 = ORDNANCE
- 12 = TRANSPORTATION/ AIRCRAFT MAINT
- 13 = CHAPEL ACTIVITIES SP
- 14 = QUARTERMASTER
- 15 = MEDICAL

OTHER

- 06 = AUDIO-VISUAL
- 19 = COMMAND SERGEANT MAJOR
- 20 = NONE OF THE ABOVE

NONCOMMISSIONED OFFICERS
PERCENT PERFORMING BY COMBAT ARMS BRANCHES
(WITH CROSSWALK FOR GRADE-CRITICAL TASKS)

Global Duty A: Train, Teach, & Develop
(Duties A-E)

TASK #		01	02	03	04	05	16
A. Train Soldiers							
1	+	X	X	X	X	X	X
2	+	X	X	X	X	X	
3	+	X	X	X	X	X	X
4	+	X	X	X	X	X	
5	+	X	X	X	X	X	X
6	+	X	X	X	X	X	X
7	+	X	X	X	X	X	X
8	:	X	X	X		X	
9	+	X	X	X		X	
10	:	X		X		X	
11	+	X	X	X	X	X	X
12	+	X	X	X	X	X	X
13	+	X	X	X	X	X	X
14	+	X	X	X	X	X	
15	+	X	X	X			
16	:	X				X	
17	-						*
18	+	X	X	X		X	
19	+	X	X	X	X	X	X
20	+	X	X	X	X	X	X
21	:						
B. Teach Soldiers							
22	+						
23	+	X	X				
24	+	X	X	X	X	X	
25	:						
26	:						
27	+	X	X	X	X	X	
28	+	X					
29	:	X		X		X	
30	:						
31	:						
32	:						
33	+	X	X	X	X	X	X
34	:						*
35	+	X	X	X		X	
36	:						*
37	+	X	X	X	X	X	X
38	:						*
39	+						

		COMBAT ARMS					
TASK #	:	01	02	03	04	05	16

	:	C. Develop Leaders					
	:						
40	+ :	X	X	X	X	X	
41	+ :	X	X	X	X	X	X
42	+ :	X	X	X	X	X	X
43	+ :	X	X	X	X	X	X
44	+ :	X	X	X			
45	+ :	X	X	X	X	X	
46	+ :	X					
47	+ :						
48	+ :	X		X			
49	+ :	X	X	X			
50	+ :	X		X			
51	+ :	X	X	X	X	X	
52	+ :	X	X	X	X	X	
53	+ :	X					
54	+ :						*
55	+ :						
56	+ :	X		X			
57	+ :	X	X	X	X	X	X
58	+ :	X	X	X		X	X
59	+ :	X	X	X	X	X	
60	+ :	X	X	X	X		

	:	D. Plan and Conduct Training					
	:						
61	+ :			X			
62	+ :			X			
63	+ :						
64	:						
65	:						
66	+ :						
67	+ :						
68	+ :						
69	:					*	*
70	:				*		*
71	+ :						
72	+ :						
73	+ :						
74	+ :						
75	:	*	*	*	*	*	*
76	+ :	X					
77	+ :						
78	+ :						*
79	+ :						
80	:						*
81	+ :	*	*	*	*	*	*
82	+ :						

(CONTINUED)							

TASK #		COMBAT ARMS					
		01	02	03	04	05	16
83	:	*	*	*	*	*	*
84	:	*	*	*	*	*	*
85	+ :						
86	+ :						
87	+ :						
88	+ :						
89	:						
90	:						
91	+ :	X	X	X	X	X	X
92	+ :						
93	+ :	X		X			
94	+ :					X	
95	+ :						*
96	:	*	*	*	*	*	*
97	:	*	*	*	*	*	*
98	- :	*	*	*	*	*	*
99	:	*	*	*	*	*	*
100	+ :						*
101	:			*	*		*
102	:	*	*	*	*	*	*

E. Train in the Field
to Enter Combat

103	+ :						*
104	:	*	*	*	*	*	*
105	+ :						*
106	+ :				*		*
107	+ :					*	*
108	:		*	*		*	*
109	+ :			*	*		*
110	+ :						*
111	+ :						*
112	:		*	*	*	*	*
113	+ :						*
114	+ :						*
115	+ :		*	*	*	*	*
116	:		*	*	*	*	*
117	+ :						*
118	+ :				*		*
119	+ :						*
120	+ :						*
121	:		*		*	*	*
122	:	*	*	*	*	*	*
123	:			*	*	*	*
124	:			*	*	*	*
125	:			*	*	*	*
126	+ :			*		*	*

(CONTINUED)

TASK #		COMBAT ARMS					16
		01	02	03	04	05	
127	+				*	*	*
128	+				*	*	*
129	+			*	*	*	*
130	:		*	*	*	*	*
131	:	*	*	*	*	*	*
132	+						*
133	+						*
134	+						*
135	+	*	*	*	*	*	*
136	+						*
137	:		*	*	*	*	*
138	:			*	*	*	*
139	+			*	*	*	*
140	+		*	*	*	*	*
141	+		*	*	*	*	*
142	+						*
143	+						*
144	+			*	*	*	*
145	+			*	*	*	*
146	+		*	*	*	*	*

Global Duty B: Motivate
(Duties F-J)

		COMBAT ARMS					
TASK #		01	02	03	04	05	16
<hr/>							
		F. Motivate Others (The What)					
147	+	X	X	X	X	X	X
148	+						*
149	+						
150	+	X					*
151	+				*		
152	+						
153	+	X	X	X		X	
154	+	X		X			*
155	+				*		*
156	+						
157	+	X	X	X			
158	+	X	X				
159	+	X	X				
<hr/>							
		G. Motivate Others (The How)					
160	+	X	X	X	X	X	X
161	+	X	X	X	X	X	X
162	+	X				X	*
163	+			*	*		*
164	+						
165	+						
166	+						*
167	+						
168	+	X	X	X	X		
169	+	X	X	X		X	
170	+	X	X	X	X	X	X
171	+						
172	+						
173	+						
174	+						
175	+						
176	+						
177	+	X	X	X			
178	+	X					
179	+						
180	+	X	X	X	X	X	
181	+						*
182	+						*
183	+	X					
184	+		*		*		*
<hr/>							
(CONTINUED)							
<hr/>							

TASK #		COMBAT ARMS					
		01	02	03	04	05	16
185	+						*
186	+	X	X	X		X	*
187	+						*
188	+						*
189	+	X	X	X	X	X	X
190	+						
191	+	X	X	X			
192	+						
193	+						
194	+	X		X			
195	+	X	X				
196	+	X		X			
197	+						*
198	:		*	*	*	*	*
199	:		*	*	*	*	*
200	+						
201	+						

H. Develop Unit Cohesion

202	+						*
203	+						
204	+						*
205	+						*
206	+	*	*	*	*	*	*
207	+	*	*	*	*	*	*
208	+		*	*	*		*
209	+						
210	+						*
211	+						
212	+				*		*
213	+						
214	+						
215	+		*	*	*	*	*
216	+				*		*
217	+						
218	:						
219	:						
220	+	X					
221	+						
222	+						
223	+						
224	+			*	*	*	*
225	:			*	*	*	*
226	+				*		*

(CONTINUED)

TASK #		COMBAT ARMS					
		01	02	03	04	05	16
227	+				*		*
228	+				*		*
229	+						
230	+						
231	+						
232	+						
233	+						
234	+						
235	+						*
236	+				*		*
237	+						*
238	+				*		*
239	+						*
240	+						
241	+						
242	+				*		*
243	+						
244	+						
245	+				*		*
246	+						*
247	:				*		*
248	:		*	*	*	*	*
249	+				*		*
250	+				*		*
251	+				*		*
252	+				*		*
253	+						*

I. Reward and Discipline Subordinates							
254	+	X	X	X	X	X	X
255	+	X	X	X		X	
256	+						
257	+						
258	+						
259	+	X	X	X			
260	+	X	X				*
261	+	*	*	*	*	*	*
262	+		*	*	*	*	
263	+	X					
264	+						
265	+						
266	+						
267	:				*		*
268	:				*		*
269	+	X					
270	+	X	X	X			
271	+						

(CONTINUED)

TASK #		COMBAT ARMS					
		01	02	03	04	05	16
272	+	:					
273	+	:	X				
274	:	:	*	*	*	*	*
275	+	:	*	*	*	*	*
276	:	:	*	*	*	*	*
277	:	:	*	*	*	*	*
278	:	:	*	*	*	*	*
279	+	:	*	*	*	*	*
280	+	:	*	*	*	*	*
281	+	:	*	*	*	*	*
282	:	:	*	*	*	*	*
283	:	:	*	*	*	*	*

J. Take Care of Soldiers

284	+	:					
285	+	:	X	X	X		*
286	+	:			X		*
287	+	:					
288	+	:					
289	+	:					
290	+	:					*
291	+	:					X
292	+	:	X	X	X	X	
293	+	:	X	X	X	X	*
294	+	:					*
295	+	:	*	*	*	*	*
296	+	:			*		*
297	+	:			*		*
298	+	:	X				
299	+	:					
300	+	:					*
301	+	:		*	*		*
302	:	:			*		*
303	+	:					
304	+	:					
305	+	:					
306	+	:					
307	+	:					
308	+	:			*		*
309	+	:					
310	+	:					
311	+	:					
312	+	:					
313	+	:					
314	:	:					*
315	+	:					*
316	:	:					*

Global Duty C: Resource
(Duty K)

		COMBAT ARMS					
TASK #		01	02	03	04	05	16

		K. Manage Resources					
317	+ :	X	X	X		X	
318	+ :	X	X	X			
319	+ :		X				
320	+ :						
321	+ :						
322	+ :		X				
323	+ :						
324	+ :						
325	+ :		X				
326	:	*	*	*	*	*	*
327	+ :	*	*	*	*	*	*
328	:	*	*	*	*	*	*
329	:	*	*	*	*	*	*
330	+ :	*	*	*	*	*	*
331	+ :	*	*	*	*	*	*
332	+ :	*	*	*	*	*	*
333	+ :	*	*	*	*	*	*
334	:	*	*	*	*	*	*
335	+ :	*	*	*	*	*	*
336	:	*	*	*	*	*	*
337	:	*	*	*	*	*	*
338	+ :						
339	+ :	*	*	*	*	*	*
340	+ :	*	*	*	*	*	*
341	+ :						
342	+ :	*	*	*	*	*	*
343	:	*	*	*	*	*	*
344	:	*	*	*	*	*	*
345	:	*	*	*	*	*	*
346	:	*	*	*	*	*	*
347	:	*	*	*	*	*	*
348	+ :						
349	:	*	*	*	*	*	*
350	+ :						
351	+ :	*	*	*	*	*	*
352	:	*	*	*	*	*	*
353	:	*	*	*	*	*	*
354	+ :						
355	+ :	*	*	*	*	*	*
356	+ :	*	*	*	*	*	*

Global Duty D: Provide Direction
(Duties L-T)

(Duties L-1)

TASK #		01	02	03	04	05	16

	:	L. Perform/Supervise					
	:	Administrative Functions					
357	+ :	*	*	*	*	*	*
358	+ :	*	*	*	*	*	*
359	+ :						
360	+ :						
361	+ :		*	*	*		*
362	+ :	*	*	*	*	*	*
363	+ :		*	*	*	*	*
364	+ :	*	*	*	*	*	*
365	+ :	*	*	*	*	*	*
366	+ :	*	*	*	*	*	*
367	+ :	*	*	*	*	*	*
368	+ :						
369	+ :						
370	+ :	*	*	*	*	*	*
371	+ :		*	*	*		*
372	+ :	*	*	*	*	*	*
373	+ :	*	*	*	*	*	*
374	:	*	*	*	*	*	*
375	:	*	*	*	*	*	*
376	+ :	*	*	*	*	*	*
377	:	*	*	*	*	*	*
378	:	*	*	*	*	*	*
379	+ :	*	*	*	*	*	*
380	+ :	*	*	*	*	*	*
381	+ :	*	*	*	*	*	*
382	:	*	*	*	*	*	*

	:	M. Coordinate with Others					
	:	Outside the Unit					
383	+ :	*		*	*		*
384	+ :	*	*	*	*	*	*
385	+ :	*	*	*	*	*	*
386	+ :	*	*	*	*	*	*
387	+ :	*	*	*	*	*	*
388	+ :	*	*	*	*	*	*
389	:	*	*	*	*	*	*
390	:	*	*	*	*	*	*
391	+ :	*	*	*	*	*	*
392	:	*	*	*	*	*	*
393	+ :	*	*	*	*	*	*
394	+ :	*	*	*	*	*	*
395	:	*	*	*	*	*	*

(CONTINUED)

TASK #	COMBAT ARMS					
	01	02	03	04	05	16
396	*	*	*	*	*	*
397	*	*	*	*	*	*
398	*	*	*	*	*	*
399 -	*	*	*	*	*	*
400 +	*	*	*	*	*	*
401	*	*	*	*	*	*
402 +	*	*	*	*	*	*

N. Supervise Others

403 +	X	X	X	X	X	X
404	*	*	*	*	*	*
405	*	*	*	*	*	*
406 +	*	*	*	*	*	*
407 +	X	X	X	X	X	X
408 +	*	*	*	*	*	*
409 +	*	*	*	*	*	*
410 +	*	*	*	*	*	*
411 +						
412 +						
413	*	*	*	*	*	
414						
415 +						
416 +	*	*	*	*	*	*
417	*	*	*	*	*	*
418 +	*	*	*	*	*	*
419 +						
420						
421	*	*	*	*	*	*
422	*	*	*	*	*	*

O. Maintain 2-Way Information
Exchange with Subordinates

423 +						
424 +						
425 +						
426 +					X	
427 +						
428 +						
429	*	*	*	*	*	*
430 +						
431 +						
432 +						
433 +						
434 +						
435 +			*	*		*
436 +						
437 +						
438		*	*	*	*	*

(CONTINUED)

		COMBAT ARMS					
TASK #	:	01	02	03	04	05	16
439	+ :		*	*	*	*	*
440	+ :						
441	+ :						*
442	:						
443	:			*	*		*
		P. Maintain 2-Way Information Exchange with Superiors					
444	+ :						
445	+ :						
446	+ :						
447	+ :						
448	+ :		*	*	*	*	*
449	+ :						
450	:						
451	+ :	*	*	*	*	*	*
452	+ :						*
453	+ :						
454	+ :	*	*	*	*	*	*
455	+ :			*	*		*
456	+ :		*	*	*	*	*
457	+ :	*	*	*	*	*	*
458	+ :						
459	+ :	*	*	*	*		
460	+ :						
		Q. Monitor and Evaluate Performance					
461	+ :						*
462	+ :	*	*	*	*	*	*
463	+ :						
464	+ :		X				
465	+ :						*
466	+ :			*	*		*
467	+ :			*	*		*
468	+ :						
469	+ :	X	X	X	X		
470	+ :	X	X				
471	+ :						
472	+ :						
473	+ :						
474	+ :			*	*		*
475	+ :						*
476	+ :			*	*		*
477	+ :						*
478	+ :	*	*	*	*	*	*

(CONTINUED)

		COMBAT ARMS					
TASK #	:	01	02	03	04	05	16
<hr/>							
479	+ :	*	*	*	*	*	*
480	+ :		*	*	*		*
481	+ :	*	*	*	*	*	*
482	+ :		*	*	*		*
483	+ :	*	*	*	*		*
484	+ :	*	*	*	*		*
485	+ :	*	*	*	*	*	*
486	+ :						*
487	+ :						
488	+ :			*	*	*	*
489	:	*	*	*	*	*	*
490	+ :						
491	+ :						
492	+ :						
493	:	*	*	*	*	*	*
494	+ :	*	*	*	*	*	*
495	+ :	*	*	*	*	*	*
496	+ :	*	*	*	*	*	*
497	:	*	*	*	*	*	*
498	+ :			*	*	*	*
<hr/>							
		R. Conduct Counseling					
<hr/>							
499	+ :	X	X	X	X	X	X
500	+ :	*	*			*	
501	+ :	*	*	*	*	*	*
502	+ :						
503	+ :	X	X	X	X	X	
504	+ :						
505	+ :	X	X	X	X		
506	+ :						
507	+ :	X	X				
508	+ :						
509	+ :	X	X	X	X	X	X
510	+ :						*
511	:			*	*	*	*
512	:			*	*		*
513	+ :						
514	+ :						*
515	+ :						*
516	+ :						
517	+ :						
518	+ :						
519	+ :						
520	:						
521	+ :						
522	+ :						
<hr/>							

		COMBAT ARMS					
TASK #		01	02	03	04	05	16
		S. Establish Direction of Your Unit/Element					
523	+						*
524	+	*	*	*	*	*	*
525	+			*	*		*
526	+			*	*		*
527	+			*	*		*
528	+						*
529	+						*
530	+						*
531	+						*
532	+						*
533	+			*	*		*
534	+			*	*		*
535	+						*
		T. Provide Input for the Direction of the Larger Organization					
536		*	*	*	*	*	*
537		*	*	*	*	*	*
538	+	*	*	*	*	*	*
539		*	*	*	*	*	*
540		*	*	*	*	*	*
541		*	*	*	*	*	*
542	+	*	*	*	*	*	*
543		*	*	*	*	*	*
544	+	*	*	*	*	*	*
545		*	*	*	*	*	*
546		*	*	*	*	*	*
547		*	*	*	*	*	*
548		*	*	*	*	*	*
549		*	*	*	*	*	*
550		*	*	*	*	*	*
551		*	*	*	*	*	*
552		*	*	*	*	*	*
553		*	*	*	*	*	*
554		*	*	*	*	*	*
555		*	*	*	*	*	*
556		*	*	*	*	*	*
557	+	*	*	*	*	*	*
558	+	*	*	*	*	*	*
559	+	*	*	*	*	*	*
560		*	*	*	*	*	*

APPENDIX B

NONCOMMISSIONED OFFICERS PERCENT PERFORMING BY COMBAT SUPPORT BRANCHES (WITH CROSSWALK FOR GRADE-CRITICAL TASKS)

For each task, the percent performing by Combat Support branches is presented. At the same time, next to each of the task numbers in the left-hand column, a crosswalk is provided to the grade-critical tasks (based on mean ratings).

Legend

- + = Grade-Critical Task (i.e., tasks with mean rating greater than or equal to 5.00 on the Part of Position scale for one or more ranks).
- = Grade-Least-Critical Task (i.e., tasks with mean rating less than or equal to 3.00 on the Part of Position scale for one or more ranks).
- X = Percent Performing is greater than 66.6%.
- * = Percent Performing is less than or equal to 33.3%.

IMPORTANT: Tasks not marked with either an X or * are performed by 33.3% to 66.6% of the noncommissioned officers.

Branches

COMBAT ARMS

- 01 = INFANTRY
- 02 = ENGINEER
- 03 = FIELD ARTILLERY
- 04 = ADA/AD SYS MAINT
- 05 = ARMOR
- 16 = AVIATION OPERATION

COMBAT SUPPORT

- 07 = LAND COMBAT/AD SYS INTERMED MAINT/AMMO
- 08 = SIGNAL
- 10 = CHEMICAL
- 17 = MILITARY POLICE
- 18 = MILITARY INTELLIGENCE

COMBAT SERVICE SUPPORT

- 09 = ADMIN/BAND/PA/ADP/ RECRUITMENT AND REENLISTMENT
- 11 = ORDNANCE
- 12 = TRANSPORTATION/ AIRCRAFT MAINT
- 13 = CHAPEL ACTIVITIES SP
- 14 = QUARTERMASTER
- 15 = MEDICAL

OTHER

- 06 = AUDIO-VISUAL
- 19 = COMMAND SERGEANT MAJOR
- 20 = NONE OF THE ABOVE

		COMBAT SUPPORT				
TASK #	:	07	08	10	17	18
<hr/>						
	:	C. Develop Leaders				
	:					
40	+ :		X		X	
41	+ :	X	X		X	
42	+ :		X		X	
43	+ :	X	X		X	X
44	+ :				X	
45	+ :				X	
46	+ :					
47	+ :					
48	+ :					
49	+ :					
50	+ :					
51	+ :		X		X	
52	+ :		X		X	
53	+ :					
54	+ :					
55	+ :					
56	+ :				X	
57	+ :		X	X	X	X
58	+ :		X		X	
59	+ :		X		X	
60	+ :		X		X	
<hr/>						
	:	D. Plan and Conduct Training				
	:					
61	+ :					
62	+ :					
63	+ :					
64	:					
65	:					
66	+ :					
67	+ :					
68	+ :	*				
69	:	*	*	*	*	*
70	:	*	*		*	*
71	+ :					
72	+ :					
73	+ :					
74	+ :					
75	:	*	*	*	*	*
76	+ :					
77	+ :					*
78	+ :	*				*
79	+ :					
80	:	*	*	*	*	*
81	+ :	*	*	*	*	*
82	+ :					*
<hr/>						
(CONTINUED)						
<hr/>						

		COMBAT SUPPORT				
TASK #	:	07	08	10	17	18
83	:	*	*	*	*	*
84	:	*	*	*	*	*
85	+ :					*
86	+ :					
87	+ :					
88	+ :					
89	:					
90	:					
91	+ :	X	X	X	X	X
92	+ :					
93	+ :					
94	+ :					
95	+ :		*		*	
96	:		*	*	*	*
97	:	*	*	*	*	*
98	- :	*	*	*	*	*
99	:	*	*	*	*	*
100	+ :				*	
101	:	*			*	*
102	:	*				

		E. Train in the Field to Enter Combat				
103	+ :	*	*	*	*	*
104	:	*	*	*	*	*
105	+ :	*	*	*	*	*
106	+ :	*	*	*	*	*
107	+ :	*	*	*	*	*
108	:	*	*	*	*	*
109	+ :	*	*	*	*	*
110	+ :	*	*	*	*	*
111	+ :	*	*	*	*	*
112	:	*	*	*	*	*
113	+ :	*	*	*	*	*
114	+ :	*	*	*	*	*
115	+ :	*	*	*	*	*
116	:	*	*	*	*	*
117	+ :	*	*	*	*	*
118	+ :	*	*	*	*	*
119	+ :	*	*	*	*	*
120	+ :	*	*	*	*	*
121	:	*	*	*	*	*
122	:	*	*	*	*	*
123	:	*	*	*	*	*
124	:	*	*	*	*	*
125	:	*	*	*	*	*
126	+ :	*	*	*	*	*

(CONTINUED)

		COMBAT SUPPORT				
TASK #	:	07	08	10	17	18
127	+ :	*	*	*	*	*
128	+ :	*	*	*	*	*
129	+ :	*	*	*	*	*
130	:	*	*	*	*	*
131	:	*	*	*	*	*
132	+ :	*		*	*	*
133	+ :	*	*	*	*	*
134	+ :	*		*	*	*
135	+ :	*	*	*	*	*
136	+ :	*	*	*	*	*
137	:	*	*	*	*	*
138	:	*	*	*	*	*
139	+ :	*	*	*	*	*
140	+ :	*	*	*	*	*
141	+ :	*	*	*	*	*
142	+ :	*	*	*	*	*
143	+ :	*	*	*	*	*
144	+ :	*	*	*	*	*
145	+ :	*	*	*	*	*
146	+ :	*	*	*	*	*

Global Duty B: Motivate
(Duties F-J)

		COMBAT SUPPORT				
TASK #	:	07	08	10	17	18
<hr/>						
	:	F. Motivate Others				
	:	(The What)				
147	+ :	X	X	X	X	X
148	+ :					
149	+ :	*	*			*
150	+ :					*
151	+ :	*	*	*	*	*
152	+ :					
153	+ :				X	
154	+ :					
155	:	*	*	*	*	*
156	+ :	*	*	*		*
157	+ :		X		X	
158	+ :					
159	+ :					
<hr/>						
	:	G. Motivate Others				
	:	(The How)				
160	+ :	X	X	X	X	X
161	+ :	X	X	X	X	X
162	+ :					*
163	+ :	*	*	*	*	*
164	+ :	*				
165	+ :					
166	+ :					
167	+ :	*	*	*	*	*
168	+ :		X		X	
169	+ :				X	
170	+ :	X	X		X	X
171	+ :					
172	+ :				X	
173	+ :					
174	+ :					
175	+ :			*		*
176	+ :					
177	+ :				X	
178	+ :					
179	+ :					
180	+ :		X		X	
181	+ :	*	*			*
182	+ :	*	*	*	*	*
183	+ :					
184	+ :	*	*	*	*	*
<hr/>						

TASK #		COMBAT SUPPORT				
		07	08	10	17	18
185	+	*		*	*	*
186	+					
187	+	*	*			*
188	+	*	*			*
189	+		X		X	
190	+					
191	+		X			
192	+					
193	+					
194	+					
195	+					
196	+					
197	+	*	*	*	*	*
198		*	*	*	*	*
199		*	*	*	*	*
200	+					
201	+					*

H. Develop Unit Cohesion						
202	+	*		*		*
203	+					
204	+					
205	+	*				*
206	+	*	*	*	*	*
207	+	*	*	*	*	*
208	+	*	*	*	*	*
209	+					
210	+	*	*	*	*	*
211	+	*				
212	+	*	*	*	*	*
213	+			*		*
214	+					
215	+	*	*	*	*	*
216	+	*	*	*	*	*
217	+					
218						
219						
220	+					
221	+					
222	+					
223	+					
224	+	*	*	*	*	*
225		*	*	*	*	*
226	+	*	*	*		*

(CONTINUED)

		COMBAT SUPPORT				
TASK #	:	07	08	10	17	18
227	+ :	*	*	*	*	*
228	+ :	*	*	*		*
229	+ :					
230	+ :					
231	+ :					
232	+ :					
233	+ :			*		
234	+ :					
235	+ :	*	*	*	*	*
236	+ :	*	*	*	*	*
237	+ :	*	*	*		*
238	+ :	*	*	*		*
239	+ :	*	*	*		*
240	+ :					*
241	+ :					
242	+ :	*		*		*
243	+ :					
244	+ :		*	*		*
245	+ :	*		*	*	*
246	+ :	*		*		*
247	:	*	*	*	*	*
248	:	*	*	*	*	*
249	+ :	*		*		*
250	+ :	*		*		*
251	+ :	*	*	*		*
252	+ :	*	*	*	*	*
253	+ :	*		*		*

		I. Reward and Discipline Subordinates				
254	+ :	X	X	X	X	X
255	+ :		X		X	
256	+ :					
257	+ :			*		*
258	+ :			*		
259	+ :					
260	+ :					
261	+ :	*	*	*	*	*
262	+ :	*	*	*	*	*
263	+ :					
264	+ :					
265	+ :					
266	+ :					
267	:	*	*	*	*	*
268	:	*	*	*	*	*
269	+ :				X	
270	+ :					
271	+ :			*		*

(CONTINUED)

		COMBAT SUPPORT				
TASK #	:	07	08	10	17	18
<hr/>						
272	+ :					
273	+ :					
274	:	*	*	*	*	*
275	+ :	*	*	*	*	*
276	:	*	*	*	*	*
277	:	*	*	*	*	*
278	:	*	*	*	*	*
279	+ :					
280	+ :	*	*	*		*
281	+ :	*		*		*
282	:	*	*	*	*	*
283	:	*	*	*	*	*
<hr/>						
		J. Take Care of Soldiers				
<hr/>						
284	+ :					
285	+ :					
286	+ :					*
287	+ :	*			*	*
288	+ :					
289	+ :					
290	+ :			*		*
291	+ :					*
292	+ :	X	X		X	
293	+ :		X		X	
294	+ :			*		*
295	+ :	*	*	*	*	*
296	+ :	*	*	*	*	*
297	+ :	*	*	*	*	*
298	+ :					
299	+ :			*		*
300	+ :			*		*
301	+ :	*	*	*	*	*
302	:	*	*	*	*	*
303	+ :					
304	+ :					
305	+ :					
306	+ :					
307	+ :					
308	+ :					
309	+ :	*	*	*	*	*
310	+ :					
311	+ :			*		*
312	+ :			*		*
313	+ :					
314	:					
315	+ :			*		*
316	:	*	*	*	*	*

Global Duty C: Resource
(Duty K)

		COMBAT SUPPORT				
TASK #	:	07	08	10	17	18

	:	K. Manage Resources				
	:					
317	+ :	X	X		X	X
318	+ :					
319	+ :		X			X
320	+ :					
321	+ :					
322	+ :		X			X
323	+ :					
324	+ :			*		
325	+ :					X
326	:	*	*	*	*	*
327	+ :	*	*	*	*	*
328	:	*	*	*	*	*
329	:	*	*	*	*	*
330	+ :	*	*	*	*	*
331	+ :	*	*	*	*	*
332	+ :	*	*	*	*	*
333	+ :	*	*	*	*	*
334	:	*	*	*	*	*
335	+ :	*	*	*	*	*
336	:	*	*	*	*	*
337	:	*	*	*	*	*
338	+ :					
339	+ :	*	*	*	*	*
340	+ :	*	*	*	*	*
341	+ :	*	*	*	*	*
342	+ :	*	*	*	*	*
343	:	*	*	*	*	*
344	:	*	*	*	*	*
345	:	*	*	*	*	*
346	:	*	*	*	*	*
347	:	*	*	*	*	*
348	+ :					
349	:	*	*	*	*	*
350	+ :					
351	+ :	*	*	*	*	*
352	:	*	*	*	*	*
353	:	*	*	*	*	*
354	+ :					*
355	+ :	*	*	*	*	*
356	+ :	*	*	*	*	*

Global Duty D: Provide Direction
(Duties L-T)

		COMBAT SUPPORT				
TASK #		07	08	10	17	18
		L. Perform/Supervise Administrative Functions				
357	+ :	*	*	*	*	*
358	+ :	*	*	*	*	*
359	+ :					
360	+ :					
361	+ :	*	*		*	
362	+ :	*	*	*	*	*
363	+ :	*				
364	+ :	*	*	*	*	*
365	+ :	*	*	*	*	*
366	+ :	*	*	*	*	*
367	+ :	*	*	*	*	*
368	+ :					
369	+ :					
370	+ :	*	*	*		
371	+ :	*				
372	+ :	*	*	*	*	*
373	+ :	*	*		*	*
374	:	*	*	*	*	*
375	:	*	*	*	*	*
376	+ :	*	*	*	*	*
377	:	*	*	*	*	*
378	:	*	*	*	*	*
379	+ :	*	*	*	*	*
380	+ :	*	*	*	*	*
381	+ :	*	*	*	*	*
382	:	*	*	*	*	*
		M. Coordinate with Others Outside the Unit				
383	+ :					
384	+ :	*	*	*	*	*
385	+ :	*	*	*	*	*
386	+ :	*	*	*	*	*
387	+ :	*	*	*	*	*
388	+ :	*	*	*	*	*
389	:	*	*	*	*	*
390	:	*	*	*	*	*
391	+ :	*	*	*	*	*
392	:	*	*	*	*	*
393	+ :	*	*	*	*	*
394	+ :	*	*	*	*	*
395	:	*	*	*	*	*

(CONTINUED)

		COMBAT SUPPORT				
TASK #		07	08	10	17	18
396	:	*	*	*	*	*
397	:	*	*	*	*	*
398	:	*	*	*	*	*
399	- :	*	*	*	*	*
400	+ :	*	*	*	*	*
401	:	*	*	*	*	*
402	+ :	*	*	*	*	*

		N. Supervise Others				
403	+ :	X	X		X	X
404	:	*	*	*	*	*
405	:	*	*	*	*	*
406	+ :	*	*	*	*	*
407	+ :	X	X		X	X
408	+ :					
409	+ :	*	*	*	*	*
410	+ :	*	*	*	*	*
411	+ :			*		
412	+ :			*		
413	:			*	*	*
414	:					
415	+ :					
416	+ :	*	*	*		*
417	:	*	*	*	*	*
418	+ :	*		*	*	
419	+ :					
420	:					
421	:	*	*	*	*	*
422	:	*	*	*	*	*

		O. Maintain 2-Way Information Exchange with Subordinates				
423	+ :					
424	+ :		X			
425	+ :					
426	+ :				X	
427	+ :					
428	+ :			*		
429	:	*	*	*	*	*
430	+ :					
431	+ :					
432	+ :					
433	+ :					
434	+ :					
435	+ :	*	*	*	*	*
436	+ :					
437	+ :					
438	:	*	*	*	*	*

(CONTINUED)

		COMBAT SUPPORT				
TASK #	:	07	08	10	17	18
439	+ :	*	*	*	*	*
440	+ :			*		*
441	+ :	*		*		
442	:			*		
443	:	*	*	*	*	*
<hr/>						
		P. Maintain 2-Way Information Exchange with Superiors				
444	+ :					
445	+ :					
446	+ :					
447	+ :					
448	+ :	*	*	*	*	*
449	+ :					
450	:					
451	+ :	*	*	*	*	*
452	+ :					
453	+ :			*		
454	+ :	*	*	*	*	*
455	+ :	*	*	*		*
456	+ :	*	*	*	*	*
457	+ :	*	*	*	*	*
458	+ :			*		
459	+ :	*	*	*		*
460	+ :			*		
<hr/>						
		Q. Monitor and Evaluate Performance				
461	+ :			*		*
462	+ :	*	*	*	*	*
463	+ :					
464	+ :		X		X	
465	+ :	*	*	*	*	*
466	+ :	*	*	*	*	*
467	+ :	*	*	*	*	*
468	+ :	*		*		*
469	+ :		X			
470	+ :		X			
471	+ :					
472	+ :	*		*		*
473	+ :			*		
474	+ :	*	*	*	*	*
475	+ :	*	*	*	*	*
476	+ :	*	*	*	*	*
477	+ :	*		*	*	*
478	+ :	*	*	*	*	*
<hr/>						
(CONTINUED)						
<hr/>						

		COMBAT SUPPORT				
TASK #	:	07	08	10	17	18
<hr/>						
479	+ :	*	*	*	*	*
480	+ :	*	*	*	*	*
481	+ :	*	*	*	*	*
482	+ :	*	*	*	*	*
483	+ :	*	*	*	*	*
484	+ :	*	*	*	*	*
485	+ :	*	*	*	*	*
486	+ :					
487	+ :	*	*	*	*	*
488	+ :	*		*	*	*
489	:	*	*	*	*	*
490	+ :					
491	+ :			*		
492	+ :					
493	:	*	*	*	*	*
494	+ :	*	*	*	*	*
495	+ :	*	*	*	*	*
496	+ :	*	*	*	*	*
497	:	*	*	*	*	*
498	+ :	*	*	*	*	*
<hr/>						
		R. Conduct Counseling				
<hr/>						
499	+ :	X	X		X	X
500	+ :					
501	+ :	*	*	*	*	*
502	+ :					
503	+ :		X		X	
504	+ :					
505	+ :		X		X	
506	+ :					
507	+ :				X	
508	+ :					
509	+ :	X	X		X	X
510	+ :	*		*		*
511	:	*	*	*	*	*
512	:	*	*	*	*	*
513	+ :			*		*
514	+ :					*
515	+ :	*		*		*
516	+ :	*		*		*
517	+ :					
518	+ :					*
519	+ :					*
520	:	*		*		*
521	+ :					
522	+ :					
<hr/>						

		COMBAT SUPPORT				
TASK #		07	08	10	17	18
		S. Establish Direction of Your Unit/Element				
523	+ :	*	*	*		
524	+ :	*	*	*	*	*
525	+ :	*	*	*	*	*
526	+ :	*	*	*	*	*
527	+ :	*	*	*	*	*
528	+ :	*	*	*	*	*
529	+ :	*	*	*	*	*
530	+ :			*		
531	+ :			*		
532	+ :	*	*			*
533	+ :	*	*	*	*	*
534	+ :	*	*	*	*	*
535	+ :	*				*
		T. Provide Input for the Direction of the Larger Organization				
536	:	*	*	*	*	*
537	:	*	*	*	*	*
538	+ :	*	*	*	*	*
539	:	*	*	*	*	*
540	:	*	*	*	*	*
541	:	*	*	*	*	*
542	+ :	*	*	*	*	*
543	:	*	*	*	*	*
544	+ :	*	*	*	*	*
545	:	*	*	*	*	*
546	:	*	*	*	*	*
547	:	*	*	*	*	*
548	:	*	*	*	*	*
549	:	*	*	*	*	*
550	:	*	*	*	*	*
551	:	*	*	*	*	*
552	:	*	*	*	*	*
553	:	*	*	*	*	*
554	:	*	*	*	*	*
555	:	*	*	*	*	*
556	:	*	*	*	*	*
557	+ :	*	*	*	*	*
558	+ :	*	*	*	*	*
559	+ :	*	*	*	*	*
560	:	*	*	*	*	*

APPENDIX C

NONCOMMISSIONED OFFICERS PERCENT PERFORMING BY COMBAT SERVICE SUPPORT BRANCHES (WITH CROSSWALK FOR GRADE-CRITICAL TASKS)

For each task, the percent performing by Combat Service Support branches is presented. At the same time, next to each of the task numbers in the left-hand column, a crosswalk is provided to the grade-critical tasks (based on mean ratings).

Legend

- + = Grade-Critical Task (i.e., tasks with mean rating greater than or equal to 5.00 on the Part of Position scale for one or more ranks).
- = Grade-Least-Critical Task (i.e., tasks with mean rating less than or equal to 3.00 on the Part of Position scale for one or more ranks).
- X = Percent Performing is greater than 66.6%.
- * = Percent Performing is less than or equal to 33.3%.

IMPORTANT: Tasks not marked with either an X or * are performed by 33.3% to 66.6% of the noncommissioned officers.

Branches

COMBAT ARMS

- 01 = INFANTRY
- 02 = ENGINEER
- 03 = FIELD ARTILLERY
- 04 = ADA/AD SYS MAINT
- 05 = ARMOR
- 16 = AVIATION OPERATION

COMBAT SUPPORT

- 07 = LAND COMBAT/AD SYS INTERMED MAINT/AMMO
- 08 = SIGNAL
- 10 = CHEMICAL
- 17 = MILITARY POLICE
- 18 = MILITARY INTELLIGENCE

COMBAT SERVICE SUPPORT

- 09 = ADMIN/BAND/PA/ADP/ RECRUITMENT AND REENLISTMENT
- 11 = ORDNANCE
- 12 = TRANSPORTATION/ AIRCRAFT MAINT
- 13 = CHAPEL ACTIVITIES SP
- 14 = QUARTERMASTER
- 15 = MEDICAL

OTHER

- 06 = AUDIO-VISUAL
- 19 = COMMAND SERGEANT MAJOR
- 20 = NONE OF THE ABOVE

NONCOMMISSIONED OFFICERS
PERCENT PERFORMING BY COMBAT SERVICE SUPPORT BRANCHES
(WITH CROSSWALK FOR GRADE-CRITICAL TASKS)

Global Duty A: Train, Teach, & Develop
(Duties A-E)

		COMBAT SERVICE SUPPORT					
TASK #	:	09	11	12	13	14	15

		A. Train Soldiers					
1	+	X	X	X	X	X	X
2	+		X	X		X	X
3	+	X	X	X	X	X	X
4	+		X	X			X
5	+		X	X	X	X	X
6	+	X	X	X	X	X	X
7	+		X	X	X	X	X
8	:	*					
9	+		X	X	X		
10	:	*					*
11	+		X	X			X
12	+		X	X		X	X
13	+	X	X	X	X	X	X
14	+		X	X	X	X	X
15	+		X			X	
16	:						
17	-	*			*		*
18	+		X	X			X
19	+	X	X	X	X	X	X
20	+	X	X	X	X	X	X
21	:						

		B. Teach Soldiers					
22	+						
23	+						
24	+	X	X	X	X	X	X
25	:						
26	:						
27	+		X	X		X	X
28	+						
29	:	*					
30	:	*					
31	:						
32	:	*			*		
33	+	X	X	X	X	X	X
34	:						
35	+		X			X	
36	:	*					
37	+	X	X	X	X	X	X
38	:	*					
39	+						

		COMBAT SERVICE SUPPORT					
TASK #	:	09	11	12	13	14	15

	:	C. Develop Leaders					
	:						
40	+	:		X	X	X	X
41	+	:	X	X	X	X	X
42	+	:		X	X	X	X
43	+	:	X	X	X	X	X
44	+	:					
45	+	:		X			X
46	+	:					
47	+	:					
48	+	:					
49	+	:					
50	+	:	*				
51	+	:		X	X	X	X
52	+	:		X	X	X	X
53	+	:					
54	+	:					
55	+	:					
56	+	:					
57	+	:		X	X	X	X
58	+	:		X		X	
59	+	:		X		X	X
60	+	:		X			

	:	D. Plan and Conduct Training					
	:						
61	+	:					
62	+	:	*				
63	+	:					
64	:	:			X		
65	:	:					
66	+	:					
67	+	:					
68	+	:	*				
69	:	:	*	*	*	*	*
70	:	:	*	*	*	*	*
71	+	:	*				
72	+	:	*				
73	+	:					
74	+	:	*				
75	:	:	*	*	*	*	*
76	+	:					
77	+	:	*				
78	+	:	*	*	*	*	*
79	+	:	*				
80	:	:	*	*	*	*	*
81	+	:	*	*	*	*	*
82	+	:	*				

(CONTINUED)							

		COMBAT SERVICE SUPPORT					
TASK #		09	11	12	13	14	15
83		*	*	*	*	*	*
84		*	*	*	*	*	*
85	+						
86	+	*					*
87	+	*					*
88	+	*					
89							
90							
91	+		X	X	X	X	X
92	+						
93	+				X		
94	+						
95	+	*	*	*		*	
96		*	*	*	*	*	
97		*	*	*	*	*	*
98	-	*	*	*	*	*	*
99		*	*	*	*	*	*
100	+				*		
101		*			*		*
102		*		*	*	*	*

		E. Train in the Field to Enter Combat					
103	+	*	*	*	*	*	*
104		*	*	*	*	*	*
105	+	*	*	*	*	*	*
106	+	*	*	*	*	*	*
107	+	*	*	*	*	*	*
108		*	*	*	*	*	*
109	+	*	*	*	*	*	*
110	+	*	*	*	*	*	*
111	+	*	*	*	*	*	*
112		*	*	*	*	*	*
113	+	*	*	*	*	*	*
114	+	*	*	*	*	*	*
115	+	*	*	*	*	*	*
116		*	*	*	*	*	*
117	+	*	*	*	*	*	*
118	+	*	*	*	*	*	*
119	+	*	*	*	*	*	*
120	+	*	*	*	*	*	*
121		*	*	*	*	*	*
122		*	*	*	*	*	*
123		*	*	*	*	*	*
124		*	*	*	*	*	*
125		*	*	*	*	*	*
126	+	*	*	*	*	*	*

(CONTINUED)

		COMBAT SERVICE SUPPORT					
TASK #	:	09	11	12	13	14	15
127	+ :	*	*		*	*	*
128	+ :	*	*	*	*	*	*
129	+ :	*	*	*	*	*	*
130	:	*	*	*	*	*	*
131	:	*	*	*	*	*	*
132	+ :	*			*		*
133	+ :	*		*	*	*	*
134	+ :	*	*	*	*	*	*
135	+ :	*	*	*	*	*	*
136	+ :	*	*	*	*	*	*
137	:	*	*	*	*	*	*
138	:	*	*	*	*	*	*
139	+ :	*	*	*	*	*	*
140	+ :	*	*	*	*	*	*
141	+ :	*	*	*	*	*	*
142	+ :	*	*	*	*	*	*
143	+ :	*	*	*	*	*	*
144	+ :	*	*	*	*	*	*
145	+ :	*	*	*	*		*
146	+ :	*	*	*	*	*	*

Global Duty B: Motivate
(Duties F-J)

TASK #		COMBAT SERVICE SUPPORT					
		09	11	12	13	14	15
		F. Motivate Others (The What)					
147	+ :	X	X	X	X	X	X
148	+ :						
149	+ :	*	*	*	*	*	*
150	+ :	*			*		*
151	+ :	*	*	*	*	*	*
152	+ :						
153	+ :		X				
154	+ :						
155	+ :	*	*	*	*	*	*
156	+ :	*			*	*	*
157	+ :		X				
158	+ :						
159	+ :	*	X	X			
		G. Motivate Others (The How)					
160	+ :	X	X	X	X	X	X
161	+ :	X	X	X	X	X	X
162	+ :	*			*		*
163	+ :	*	*	*	*	*	*
164	+ :	*			*		*
165	+ :						
166	+ :						
167	+ :	*	*	*	*		*
168	+ :		X		X		
169	+ :		X				
170	+ :	X	X	X	X	X	X
171	+ :						
172	+ :						
173	+ :						
174	+ :						
175	+ :	*					
176	+ :	*					*
177	+ :		X	X	X	X	
178	+ :		X				
179	+ :						
180	+ :		X	X	X		
181	+ :	*	*	*	*	*	*
182	+ :	*	*	*	*	*	*
183	+ :	*	*	*	*	*	*
184	+ :	*	*	*	*	*	*

(CONTINUED)

		COMBAT SERVICE SUPPORT					
TASK #	:	09	11	12	13	14	15
<hr/>							
185	+ :	*			*	*	*
186	+ :		X				
187	+ :	*		*	*		*
188	+ :	*		*	*		*
189	+ :						
190	+ :						
191	+ :		X				
192	+ :						
193	+ :	*			*		
194	+ :						
195	+ :						
196	+ :	*					*
197	+ :	*	*	*	*	*	*
198	:	*	*	*	*	*	*
199	:	*	*	*	*	*	*
200	+ :						
201	+ :	*					

		H. Develop Unit Cohesion					
	:						
202	+	:	*	*		*	*
203	+	:	*				
204	+	:	*				
205	+	:	*			*	*
206	+	:	*	*	*	*	*
207	+	:	*	*	*	*	*
208	+	:	*	*	*	*	*
209	+	:					
210	+	:	*	*	*	*	*
211	+	:	*			*	
212	+	:	*	*	*	*	*
213	+	:	*			*	
214	+	:					
215	+	:	*	*	*	*	*
216	+	:	*	*	*	*	*
217	+	:					
218		:			*		
219		:	*		*		
220	+	:					
221	+	:					
222	+	:					
223	+	:					
224	+	:	*	*	*	*	*
225		:	*	*	*	*	*
226	+	:	*	*	*	*	*

(CONTINUED)

		COMBAT SERVICE SUPPORT					
TASK #	:	09	11	12	13	14	15
227	+ :	*	*	*	*	*	*
228	+ :	*	*	*	*	*	*
229	+ :						
230	+ :						
231	+ :						
232	+ :						
233	+ :				*		
234	+ :				*		
235	+ :	*	*	*	*	*	*
236	+ :	*	*	*	*	*	*
237	+ :	*	*	*	*	*	*
238	+ :	*	*	*	*	*	*
239	+ :	*	*	*	*	*	*
240	+ :	*			*		
241	+ :	*			*		
242	+ :	*	*	*	*	*	*
243	+ :						
244	+ :	*			*		
245	+ :	*	*	*	*	*	*
246	+ :	*		*	*		
247	:	*	*	*	*		*
248	:	*	*	*		*	*
249	+ :	*	*	*		*	
250	+ :	*			*		
251	+ :	*	*	*	*	*	*
252	+ :	*	*	*	*	*	*
253	+ :	*		*	*		

		I. Reward and Discipline Subordinates					
254	+ :	X	X	X	X	X	X
255	+ :						
256	+ :						
257	+ :						
258	+ :						
259	+ :						
260	+ :						
261	+ :	*	*	*	*	*	*
262	+ :	*	*	*	*	*	*
263	+ :						
264	+ :						
265	+ :						
266	+ :						
267	:	*	*	*	*	*	*
268	:	*	*	*	*	*	*
269	+ :						
270	+ :						
271	+ :				*		

(CONTINUED)

		COMBAT SERVICE SUPPORT					
TASK #	:	09	11	12	13	14	15
<hr/>							
272	+ :						
273	+ :						
274	:	*	*	*	*	*	*
275	+ :	*	*	*	*	*	*
276	:	*	*	*	*	*	*
277	:	*	*	*	*	*	*
278	:	*	*	*	*	*	*
279	+ :						
280	+ :	*	*	*	*	*	*
281	+ :	*			*		
282	:	*	*	*	*	*	*
283	:	*	*	*	*	*	*
<hr/>							
		J. Take Care of Soldiers					
<hr/>							
284	+ :						
285	+ :						
286	+ :	*			*		*
287	+ :	*			*		*
288	+ :						
289	+ :						
290	+ :	*			*		
291	+ :	*			*		*
292	+ :		X		X	X	X
293	+ :					X	X
294	+ :	*			*		
295	+ :	*	*	*	*	*	*
296	+ :	*	*	*	*		*
297	+ :	*	*	*	*		*
298	+ :						
299	+ :	*					
300	+ :				*		
301	+ :	*	*	*	*	*	*
302	:	*	*	*	*		*
303	+ :						
304	+ :						
305	+ :						
306	+ :						
307	+ :						
308	+ :						
309	+ :	*	*	*	*		*
310	+ :			*	*		
311	+ :	*		*	*		
312	+ :						
313	+ :						
314	:						
315	+ :	*			*		*
316	:	*		*	*		*

Global Duty C: Resource
(Duty K)

		COMBAT SERVICE SUPPORT					
TASK #	:	09	11	12	13	14	15
		K. Manage Resources					
317	+ :	X	X	X	X	X	X
318	+ :				X		X
319	+ :				X		X
320	+ :				X	X	X
321	+ :						
322	+ :						X
323	+ :						
324	+ :						
325	+ :	X	X		X	X	X
326	:	*	*	*	*	*	*
327	+ :	*	*	*	*	*	*
328	:	*	*	*	*	*	*
329	:	*	*	*	*	*	*
330	+ :	*	*	*	*	*	*
331	+ :	*	*	*	*	*	*
332	+ :	*	*	*	*	*	*
333	+ :	*	*	*	*	*	*
334	:	*	*	*	*	*	*
335	+ :	*	*	*	*	*	*
336	:	*	*	*	*	*	*
337	:	*	*	*	*	*	*
338	+ :						
339	+ :	*	*	*	*	*	*
340	+ :	*	*	*	*	*	*
341	+ :	*			*		*
342	+ :	*	*	*	*	*	*
343	:	*	*	*	*	*	*
344	:	*	*	*	*	*	*
345	:	*	*	*	*	*	*
346	:	*	*	*	*	*	*
347	:	*	*	*	*	*	*
348	+ :						
349	:	*	*	*	*	*	*
350	+ :	*					
351	+ :	*	*	*	*	*	*
352	:	*	*	*	*	*	*
353	:	*	*	*	*	*	*
354	+ :	*					
355	+ :	*	*	*	*	*	*
356	+ :	*	*	*	*		*

Global Duty D: Provide Direction
(Duties L-T)

		COMBAT SERVICE SUPPORT					
TASK #		09	11	12	13	14	15
		L. Perform/Supervise Administrative Functions					
357	+ :		*	*		*	
358	+ :		*	*		*	*
359	+ :						
360	+ :	*	*	*			
361	+ :		*	*		*	
362	+ :	*	*	*	*	*	*
363	+ :		*	*			
364	+ :	*	*	*	*	*	*
365	+ :	*	*	*	*	*	*
366	+ :	*	*	*	*	*	*
367	+ :	*	*	*	*	*	*
368	+ :						
369	+ :		*				
370	+ :		*	*			
371	+ :	*			*		
372	+ :	*	*	*	*	*	*
373	+ :	*	*	*			
374	:	*	*	*	*	*	*
375	:	*	*	*	*	*	*
376	+ :	*	*	*	*	*	*
377	:	*	*	*	*	*	*
378	:	*	*	*	*	*	*
379	+ :	*	*	*	*	*	*
380	+ :	*	*	*	*	*	*
381	+ :	*	*	*	*	*	*
382	:	*	*	*	*	*	*
		M. Coordinate with Others Outside the Unit					
383	+ :			*	*		
384	+ :	*	*	*	*	*	*
385	+ :	*	*	*	*	*	*
386	+ :	*	*	*	*	*	*
387	+ :	*	*	*	*	*	*
388	+ :	*	*	*	*	*	*
389	:	*	*	*	*	*	*
390	:	*	*	*	*	*	*
391	+ :	*	*	*	*	*	*
392	:	*	*	*	*	*	*
393	+ :	*	*	*	*	*	*
394	+ :	*	*	*	*	*	*
395	:	*	*	*	*	*	*

(CONTINUED)

		COMBAT SERVICE SUPPORT					
TASK #	:	09	11	12	13	14	15
396	:	*	*	*	*	*	*
397	:	*	*	*	*	*	*
398	:	*	*	*	*	*	*
399	- :	*	*	*	*	*	*
400	+ :	*	*	*	*	*	*
401	:	*	*	*	*	*	*
402	+ :	*	*	*	*	*	*

		N. Supervise Others					
403	+ :		X		X	X	X
404	:	*	*	*	*	*	*
405	:	*	*	*	*	*	*
406	+ :	*	*	*	*	*	*
407	+ :		X	X	X	X	X
408	+ :						
409	+ :	*	*	*	*	*	*
410	+ :	*	*	*	*	*	*
411	+ :				*		
412	+ :	*			*		
413	:	*		*	*	*	
414	:						
415	+ :						
416	+ :	*	*	*	*	*	*
417	:	*	*	*	*	*	*
418	+ :	*		*	*	*	*
419	+ :						
420	:						
421	:	*	*	*	*	*	*
422	:	*	*	*	*	*	*

		O. Maintain 2-Way Information Exchange with Subordinates					
423	+ :						
424	+ :						X
425	+ :						
426	+ :						
427	+ :						
428	+ :		*	*			
429	:	*	*	*	*	*	*
430	+ :						
431	+ :						
432	+ :						
433	+ :				*		
434	+ :						
435	+ :	*	*	*	*	*	*
436	+ :						
437	+ :						
438	:	*	*	*	*	*	*

(CONTINUED)

		COMBAT SERVICE SUPPORT					
TASK #		09	11	12	13	14	15
439	+ :	*	*	*	*	*	*
440	+ :						
441	+ :	*			*		
442	:						
443	:	*	*	*	*	*	*
		P. Maintain 2-Way Information Exchange with Superiors					
444	+ :						X
445	+ :						
446	+ :				*		
447	+ :						
448	+ :	*	*	*	*	*	*
449	+ :						
450	:						
451	+ :	*	*	*	*	*	*
452	+ :	*			*		
453	+ :				*		
454	+ :	*	*	*	*	*	*
455	+ :	*	*	*	*	*	*
456	+ :	*	*	*	*	*	*
457	+ :	*	*	*	*	*	*
458	+ :			*	*		
459	+ :	*	*	*	*		
460	+ :	*					
		Q. Monitor and Evaluate Performance					
461	+ :	*			*		*
462	+ :	*	*	*	*	*	*
463	+ :	*			*		
464	+ :						
465	+ :	*		*	*		*
466	+ :	*		*	*	*	*
467	+ :	*	*	*	*	*	*
468	+ :	*					
469	+ :						
470	+ :						
471	+ :						
472	+ :						
473	+ :						
474	+ :	*	*	*	*		*
475	+ :	*	*	*	*	*	*
476	+ :	*		*	*	*	*
477	+ :	*			*	*	*
478	+ :	*	*	*	*	*	*

(CONTINUED)

		COMBAT SERVICE SUPPORT					
TASK #	:	09	11	12	13	14	15
<hr/>							
479	+ :	*	*	*	*	*	*
480	+ :	*	*	*	*	*	*
481	+ :	*	*	*	*	*	*
482	+ :	*	*	*	*	*	*
483	+ :	*	*	*	*	*	*
484	+ :	*	*	*	*	*	*
485	+ :	*	*	*	*	*	*
486	+ :						
487	+ :	*		*	*		*
488	+ :	*		*	*		
489	:	*	*	*	*	*	*
490	+ :						
491	+ :						
492	+ :						
493	:	*	*	*	*	*	*
494	+ :	*	*	*	*	*	*
495	+ :	*	*	*	*	*	*
496	+ :	*	*	*	*	*	*
497	:	*	*	*	*	*	*
498	+ :	*	*	*	*	*	
<hr/>							
		R. Conduct Counseling					
<hr/>							
499	+ :		X			X	X
500	+ :						
501	+ :	*	*	*	*	*	
502	+ :						
503	+ :		X		X		
504	+ :						
505	+ :						
506	+ :						
507	+ :						
508	+ :						
509	+ :	X	X	X	X	X	X
510	+ :	*	*	*	*	*	*
511	:	*	*	*	*	*	*
512	:	*	*	*	*	*	*
513	+ :						
514	+ :						
515	+ :	*		*	*	*	*
516	+ :	*		*	*	*	*
517	+ :						
518	+ :				*		
519	+ :	*			*		
520	:	*			*		
521	+ :						
522	+ :						
<hr/>							

		COMBAT SERVICE SUPPORT					
TASK #		09	11	12	13	14	15
		S. Establish Direction of Your Unit/Element					
523	+ :	*	*	*	*	*	
524	+ :	*	*	*	*	*	*
525	+ :	*	*	*	*	*	*
526	+ :	*	*	*	*	*	*
527	+ :	*	*	*	*	*	*
528	+ :	*	*	*	*	*	*
529	+ :	*	*	*	*	*	*
530	+ :	*					
531	+ :	*	*	*		*	
532	+ :	*	*	*	*		*
533	+ :	*	*	*	*	*	*
534	+ :	*	*	*	*	*	*
535	+ :	*		*	*	*	*
		T. Provide Input for the Direction of the Larger Organization					
536	:	*	*	*	*	*	*
537	:	*	*	*	*	*	*
538	+ :	*	*	*	*	*	*
539	:	*	*	*	*	*	*
540	:	*	*	*	*	*	*
541	:	*	*	*	*	*	*
542	+ :	*	*	*	*	*	*
543	:	*	*	*	*	*	*
544	+ :	*	*	*	*	*	*
545	:	*	*	*	*	*	*
546	:	*	*	*	*	*	*
547	:	*	*	*	*	*	*
548	:	*	*	*	*	*	*
549	:	*	*	*	*	*	*
550	:	*	*	*	*	*	*
551	:	*	*	*	*	*	*
552	:	*	*	*	*	*	*
553	:	*	*	*	*	*	*
554	:	*	*	*	*	*	*
555	:	*	*	*	*	*	*
556	:	*	*	*	*	*	*
557	+ :	*	*	*	*	*	*
558	+ :	*	*	*	*	*	*
559	+ :	*	*	*	*	*	*
560	:	*	*	*	*	*	*

APPENDIX D

NONCOMMISSIONED OFFICERS PERCENT PERFORMING BY OTHER BRANCHES (WITH CROSSWALK FOR GRADE-CRITICAL TASKS)

For each task, the percent performing by "Other" branches is presented. At the same time, next to each of the task numbers in the left-hand column, a crosswalk is provided to the grade-critical tasks (based on mean ratings).

Legend

- + = Grade-Critical Task (i.e., tasks with mean rating greater than or equal to 5.00 on the Part of Position scale for one or more ranks).
- = Grade-Least-Critical Task (i.e., tasks with mean rating less than or equal to 3.00 on the Part of Position scale for one or more ranks).
- X = Percent Performing is greater than 66.6%.
- * = Percent Performing is less than or equal to 33.3%.

IMPORTANT: Tasks not marked with either an X or * are performed by 33.3% to 66.6% of the noncommissioned officers.

Branches

COMBAT ARMS

- 01 = INFANTRY
- 02 = ENGINEER
- 03 = FIELD ARTILLERY
- 04 = ADA/AD SYS MAINT
- 05 = ARMOR
- 16 = AVIATION OPERATION

COMBAT SUPPORT

- 07 = LAND COMBAT/AD SYS INTERMED MAINT/AMMO
- 08 = SIGNAL
- 10 = CHEMICAL
- 17 = MILITARY POLICE
- 18 = MILITARY INTELLIGENCE

COMBAT SERVICE SUPPORT

- 09 = ADMIN/BAND/PA/ADP/ RECRUITMENT AND REENLISTMENT
- 11 = ORDNANCE
- 12 = TRANSPORTATION/ AIRCRAFT MAINT
- 13 = CHAPEL ACTIVITIES SP
- 14 = QUARTERMASTER
- 15 = MEDICAL

OTHER

- 06 = AUDIO-VISUAL
- 19 = COMMAND SERGEANT MAJOR
- 20 = NONE OF THE ABOVE

NONCOMMISSIONED OFFICERS
PERCENT PERFORMING BY OTHER BRANCHES
(WITH CROSSWALK FOR GRADE-CRITICAL TASKS)

Global Duty A: Train, Teach, & Develop
(Duties A-E)

TASK #		OTHER		
		06	19	20/24

		A. Train Soldiers		
1	+	X	X	X
2	+	X	X	
3	+	X	X	X
4	+		X	X
5	+	X		X
6	+	X		X
7	+	X		X
8	:			
9	+			
10	:			
11	+	X		
12	+	X		X
13	+	X	X	X
14	+	X	X	
15	+			
16	:			
17	-	*	*	
18	+		X	
19	+	X		X
20	+	X	X	X
21	:	X	*	

		B. Teach Soldiers		
22	+			
23	+			
24	+	X	X	X
25	:			
26	:			
27	+		X	
28	+			
29	:	*		
30	:			
31	:			
32	:	*		
33	+	X	X	X
34	:		X	
35	+			
36	:	*		
37	+	X		
38	:	*		
39	+			

TASK #		06	OTHER 19	20/24

		C. Develop Leaders		
40	+ :		X	
41	+ :	X	X	
42	+ :		X	
43	+ :	X	X	X
44	+ :		X	
45	+ :		X	X
46	+ :		X	
47	+ :		X	
48	+ :		X	
49	+ :		X	
50	+ :			
51	+ :		X	
52	+ :		X	
53	+ :		X	
54	+ :		X	
55	+ :		X	
56	+ :		X	
57	+ :		X	X
58	+ :		X	X
59	+ :		X	
60	+ :		X	

		D. Plan and Conduct Training		
61	+ :		X	
62	+ :			
63	+ :			
64	:		*	
65	:		*	
66	+ :			
67	+ :		*	
68	+ :			
69	:	*	*	
70	:	*	*	
71	+ :			
72	+ :		X	
73	+ :		X	
74	+ :			
75	:	*	*	
76	+ :			
77	+ :		*	
78	+ :	*		
79	+ :			
80	:	*	*	
81	+ :	*	*	*
82	+ :	*	X	

(CONTINUED)				

TASK #		06	OTHER		20/24
			19		
83	:	*	*		*
84	:	*			*
85	+ :				
86	+ :				
87	+ :				
88	+ :		X		
89	:				
90	:				
91	+ :	X	X		X
92	+ :				
93	+ :				
94	+ :		X		
95	+ :	*			
96	:		*		
97	:	*	*		*
98	- :	*	*		*
99	:	*	*		*
100	+ :		*		
101	:		*		
102	:		*		

		E. Train in the Field to Enter Combat			
103	+ :	*	*		*
104	:	*	*		*
105	+ :	*	X		
106	+ :	*	*		*
107	+ :	*			*
108	:	*	*		*
109	+ :	*	*		*
110	+ :	*			*
111	+ :	*			
112	:	*	*		*
113	+ :	*	*		
114	+ :	*			
115	+ :	*	*		*
116	:	*	*		*
117	+ :	*	*		
118	+ :	*	*		
119	+ :	*	*		*
120	+ :	*	*		*
121	:	*	*		*
122	:	*	*		*
123	:	*	*		*
124	:	*	*		*
125	:	*	*		*
126	+ :	*	*		*

(CONTINUED)

TASK #		:	OTHER		
			06	19	20/24
127	+	:	*	*	*
128	+	:	*		*
129	+	:	*	*	*
130		:	*	*	*
131		:	*	*	*
132	+	:	*	*	*
133	+	:	*	*	*
134	+	:	*	*	*
135	+	:	*	*	*
136	+	:	*	*	*
137		:	*	*	*
138		:	*	*	*
139	+	:	*	*	*
140	+	:	*	*	*
141	+	:	*	*	*
142	+	:	*	*	*
143	+	:	*	*	*
144	+	:	*	*	*
145	+	:	*	*	*
146	+	:	*	*	*

Global Duty B: Motivate
(Duties F-J)

TASK #		:	OTHER		
		:	06	19	20

		:	F. Motivate Others		
		:	(The What)		
147	+ :	:	X	X	
148	+ :	:		X	
149	+ :	:	*		*
150	+ :	:	*		*
151	+ :	:	*		*
152	+ :	:			
153	+ :	:		X	
154	+ :	:		X	
155	:	:	*		*
156	+ :	:	*		*
157	+ :	:		X	
158	+ :	:		X	
159	+ :	:			

		:	G. Motivate Others		
		:	(The How)		
160	+ :	:	X	X	X
161	+ :	:	X	X	X
162	+ :	:	*		
163	+ :	:	*		*
164	+ :	:	*		
165	+ :	:		X	
166	+ :	:		X	
167	+ :	:	*		*
168	+ :	:		X	
169	+ :	:		X	
170	+ :	:	X	X	
171	+ :	:		X	
172	+ :	:		X	
173	+ :	:		X	
174	+ :	:			
175	+ :	:	*	X	
176	+ :	:		X	
177	+ :	:			
178	+ :	:		X	
179	+ :	:			
180	+ :	:		X	
181	+ :	:	*		*
182	+ :	:	*		*
183	+ :	:	*		
184	+ :	:	*		*

TASK #	:	06	OTHER 19	20
<hr/>				
185	+	*	*	*
186	+		X	
187	+	*	X	*
188	+	*	X	*
189	+		X	
190	+		X	
191	+			
192	+			
193	+		X	*
194	+		X	
195	+			
196	+		X	
197	+	*		*
198	:	*	*	*
199	:	*		*
200	+		X	
201	+			
<hr/>				
: H. Develop Unit Cohesion				
:				
202	+			*
203	+		X	
204	+			
205	+	*		*
206	+	*		*
207	+	*	*	*
208	+	*		*
209	+		X	
210	+	*		*
211	+		X	*
212	+	*		*
213	+			*
214	+			
215	+	*		*
216	+	*		*
217	+			
218	:			
219	:	*		*
220	+		X	
221	+		X	
222	+		X	
223	+		X	
224	+	*		*
225	:	*		*
226	+	*	X	*
<hr/>				

(CONTINUED)

TASK #	:	:	06	OTHER 19	20
<hr/>					
227	+	:	*		*
228	+	:	*	X	
229	+	:		X	
230	+	:		X	
231	+	:		X	
232	+	:			
233	+	:		X	
234	+	:		X	
235	+	:	*	X	
236	+	:	*	X	*
237	+	:	*	X	*
238	+	:	*	X	*
239	+	:	*	X	*
240	+	:		X	*
241	+	:		X	
242	+	:	*		*
243	+	:		X	
244	+	:	*	X	
245	+	:	*	X	*
246	+	:	*	X	
247		:	*		*
248		:	*		*
249	+	:	*	X	*
250	+	:	*	X	
251	+	:	*	X	*
252	+	:	*		*
253	+	:	*	X	
<hr/>					
	:	:	I. Reward and Discipline		
	:	:	Subordinates		
254	+	:	X	X	X
255	+	:		X	
256	+	:			
257	+	:		X	
258	+	:		X	
259	+	:			
260	+	:		X	
261	+	:			*
262	+	:	*		*
263	+	:			
264	+	:			
265	+	:			
266	+	:			
267		:	*		*
268		:	*		*
269	+	:			
270	+	:		X	
271	+	:			*
<hr/>					
					(CONTINUED)

TASK #	:	06	OTHER 19	20
<hr/>				
272	+ :			
273	+ :		X	
274	:	*	*	*
275	+ :	*		*
276	:	*	*	*
277	:	*	*	*
278	:	*	*	*
279	+ :		X	
280	+ :	*		*
281	+ :			
282	:	*	*	*
283	:	*	*	*
<hr/>				
	:	J. Take Care of Soldiers		
	:			
284	+ :		X	
285	+ :		X	
286	+ :	*		
287	+ :	*		*
288	+ :			
289	+ :		X	
290	+ :	*		
291	+ :	*		*
292	+ :		X	
293	+ :		X	
294	+ :	*		*
295	+ :	*		*
296	+ :	*		*
297	+ :	*		*
298	+ :			
299	+ :	*	*	*
300	+ :		*	*
301	+ :	*		*
302	:	*	*	*
303	+ :			
304	+ :		X	
305	+ :			
306	+ :		X	
307	+ :		X	
308	+ :		X	
309	+ :	*	X	
310	+ :			
311	+ :	*		*
312	+ :			*
313	+ :			
314	:			
315	+ :	*		*
316	:	*		*

Global Duty C: Resource
(Duty K)

Duty K)		:	OTHER		
TASK #	:	:	06	19	20

	:	:	K. Manage Resources		
	:	:			
317	+	:	X	X	X
318	+	:		X	
319	+	:			
320	+	:			
321	+	:		X	
322	+	:			
323	+	:			
324	+	:			
325	+	:	X	X	
326		:	*		*
327	+	:	*		*
328		:	*		*
329		:	*		*
330	+	:	*		*
331	+	:	*		*
332	+	:	*	X	*
333	+	:	*	X	*
334		:	*	*	*
335	+	:	*		*
336		:	*		*
337		:	*	*	*
338	+	:			
339	+	:	*		*
340	+	:	*	*	*
341	+	:	*	*	*
342	+	:	*	X	*
343		:	*	*	*
344		:	*	*	*
345		:	*	*	*
346		:	*	*	*
347		:	*		*
348	+	:			
349		:	*	*	*
350	+	:			
351	+	:	*		*
352		:	*	*	*
353		:	*	*	*
354	+	:		*	*
355	+	:	*		*
356	+	:	*	*	*

Global Duty D: Provide Direction
(Duties L-T)

TASK #		:	06	OTHER 19	20
		:	L. Perform/Supervise Administrative Functions		
357	+	:	*		*
358	+	:	*		*
359	+	:			*
360	+	:			*
361	+	:	*		
362	+	:	*	*	*
363	+	:	*		
364	+	:	*		*
365	+	:	*	*	*
366	+	:	*	X	*
367	+	:	*	X	*
368	+	:			*
369	+	:			
370	+	:	*		*
371	+	:		*	*
372	+	:	*	*	*
373	+	:	*		*
374		:	*	*	*
375		:	*	*	*
376	+	:	*	*	*
377		:	*	*	*
378		:	*	*	*
379	+	:	*		*
380	+	:	*	*	*
381	+	:	*	*	*
382		:	*	*	*
		:	M. Coordinate with Others Outside the Unit		
383	+	:	*		
384	+	:	*	*	*
385	+	:	*		*
386	+	:	*	*	*
387	+	:	*	*	*
388	+	:		*	*
389		:	*	*	*
390		:	*	*	*
391	+	:	*	*	*
392		:	*	*	*
393	+	:	*	*	*
394	+	:	*	*	*
395		:	*	*	*

(CONTINUED)

(CONTINUED)

TASK #			06	OTHER 19	20
396		:	*	*	*
397		:	*	*	*
398		:	*	*	*
399	-	:	*	*	*
400	+	:	*	*	*
401		:	*	*	*
402	+	:	*		*
			N. Supervise Others		
403	+	:	X	X	
404		:	*	*	*
405		:	*	*	*
406	+	:	*	*	*
407	+	:	X		
408	+	:			
409	+	:	*		*
410	+	:	*	*	*
411	+	:			
412	+	:			
413		:	*	*	*
414		:			
415	+	:			
416	+	:	*	*	*
417		:	*	*	*
418	+	:	*		*
419	+	:		*	
420		:			
421		:	*	*	*
422		:	*	*	*
			O. Maintain 2-Way Information Exchange with Subordinates		
423	+	:		X	
424	+	:		X	
425	+	:		X	
426	+	:		X	
427	+	:		X	
428	+	:		X	
429		:	*		*
430	+	:			
431	+	:			
432	+	:			
433	+	:		X	*
434	+	:		X	
435	+	:	*	*	*
436	+	:			
437	+	:			
438		:	*	*	*

TASK #	:	06	OTHER 19	20
439	+ :	*	*	*
440	+ :			
441	+ :	*	X	
442	:			
443	:	*		*

	:	P. Maintain 2-Way Information		
	:	Exchange with Superiors		
444	+ :		X	
445	+ :			
446	+ :			
447	+ :			
448	+ :	*	*	*
449	+ :			
450	:		X	
451	+ :	*	*	*
452	+ :	*	X	
453	+ :		X	
454	+ :	*		*
455	+ :	*	X	*
456	+ :	*		*
457	+ :	*	*	*
458	+ :	*	X	*
459	+ :	*		
460	+ :			

	:	Q. Monitor and Evaluate		
	:	Performance		
461	+ :	*		*
462	+ :	*		*
463	+ :	*		
464	+ :		X	
465	+ :	*	X	*
466	+ :	*	X	*
467	+ :	*	X	*
468	+ :	*		
469	+ :			
470	+ :			
471	+ :			
472	+ :		*	
473	+ :			*
474	+ :	*		*
475	+ :	*		
476	+ :	*		*
477	+ :	*		*
478	+ :	*	*	*

(CONTINUED)				

TASK #	:	06	OTHER 19	20
479	+ :	*		*
480	+ :	*		*
481	+ :	*	*	*
482	+ :	*		*
483	+ :	*	*	*
484	+ :	*		*
485	+ :	*		*
486	+ :			
487	+ :	*		*
488	+ :	*		*
489	:	*	*	*
490	+ :			*
491	+ :		X	
492	+ :			
493	:	*	*	*
494	+ :	*	*	*
495	+ :	*		*
496	+ :	*	*	*
497	:	*	*	*
498	+ :	*	X	*
R. Conduct Counseling				
499	+ :	X	X	
500	+ :			
501	+ :	*	*	*
502	+ :			
503	+ :		X	
504	+ :		X	
505	+ :		X	
506	+ :		X	
507	+ :		X	
508	+ :		X	
509	+ :	X	X	X
510	+ :	*		*
511	:	*		*
512	:	*		*
513	+ :		X	*
514	+ :			
515	+ :	*		*
516	+ :	*		*
517	+ :		X	
518	+ :		X	
519	+ :		X	
520	:	*		*
521	+ :			
522	+ :		X	

TASK #		06	OTHER 19	20

	:	S. Establish Direction of Your Unit/Element		
523	+ :	*		*
524	+ :	*	*	*
525	+ :	*		*
526	+ :	*		*
527	+ :	*		
528	+ :	*		*
529	+ :	*		
530	+ :	*	X	
531	+ :	*		*
532	+ :	*		*
533	+ :	*		*
534	+ :	*		*
535	+ :	*		*

	:	T. Provide Input for the Direction of the Larger Organization		
536	:	*	*	*
537	:	*	*	*
538	+ :	*		*
539	:	*		*
540	:	*	*	*
541	:	*	*	*
542	+ :	*	*	*
543	:	*	*	*
544	+ :	*	*	*
545	:	*	*	*
546	:	*	*	*
547	:	*	*	*
548	:	*	*	*
549	:	*	*	*
550	:	*	*	*
551	:	*	*	*
552	:	*	*	*
553	:	*	*	*
554	:	*	*	*
555	:	*	*	*
556	:	*	*	*
557	+ :	*	*	*
558	+ :	*	*	*
559	+ :	*		*
560	:	*	*	*

PB 8808

Leadership and Management Technical Area

Working Paper 87-15

MILITARY COHESION:

LITERATURE REVIEW AND THEORETICAL MODEL

Nora Kinzer Stewart

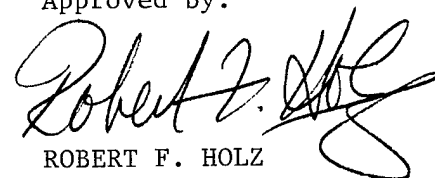
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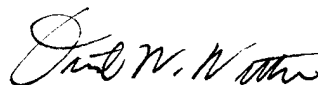
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PB 8808

MILITARY COHESION:

LITERATURE REVIEW AND THEORETICAL MODEL

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MILITARY COHESION

Four brave men who do not know each other will not dare to attack a lion. Four less brave, but knowing each other well, sure of their reliability and consequently of mutual aid, will attack resolutely.

Ardant Du Picq (c. 1870)

This paper presents a broad overview of the concept of cohesion, morale, esprit or fighting spirit to show the relationship between such concepts and losing or winning battles. As we shall see, the concept of cohesion is multi-dimensional not a single causal factor contributing to combat effectiveness. The final section presents a model for analyzing cohesion.

Military historians, sociologists and psychologists have long meditated on the issue of why men stand and fight or break and run. The task of military leaders has always been to meld young men into unified troops who would bravely face the enemy's sword, crossbow or cannon after withstanding trials of forced marches, hunger, thirst, cold, vermin, loneliness, and disillusionment. Military leaders have long sought reasons why men will fight. Is it one of or a combination of: charismatic leadership, superb tactics, adequate logistics, superior firepower, patriotism or that ephemeral quality of "esprit"?

The answer is some of the above, or all of the above, but always and most importantly that will-o-the-wisp known as "esprit", or "morale", or "will". This concept is hardly new.

After a long and arduous campaign, Greek military leader Xenophon (434-355 B.C.) wrote:

You know I am sure that not numbers or strength bring victory in war; but whichever army goes into battle stronger in soul, their enemies generally cannot withstand them.

Commanders prior to and since Xenophon have pondered the problem of turning young boys into fighting men. In time of dire crisis, young children, old men and even women have been pressed into service. But most armies have consisted of young adolescent males and young men. Civilians have been dragooned into armies by press gangs. Soldiers have fought fortified by drugs or alcohol. They have rushed to their deaths inspired by belief in Holy

Crusades or desire for Nirvana. Officers holding swords and lances have prodded men sick with fear into firefights. For good overviews of military history and analyses of men in battle through the ages, there are several references listed in the separate bibliography on cohesion found at the end of this paper (Keegan, 1986; Holmes, 1985; Keegan and Holmes, 1987).

Without exception all famed military leaders -- Xenophon, Sun Tzu, Caesar, Genghis Khan, Charlemagne, Napoleon, Wellington, Washington, Lee, McArthur, Slim, Montgomery or Mao--agree that men united for a cause, trusting in each other and confident in their leaders will be an effective and victorious army. This unity or sense of belonging manifests itself in the elegant phrase *esprit d'corps* or a simple word like "buddy". As pointed out in the first chapter, British historians have emphasized the *raison d'être* of a fighting force to be the regimental spirit or the sense of belonging.

With the advent of World War II, social psychologists worked assiduously to determine what were the elements that made men fight, fight well or break down completely. Stouffer et al's work (1949) is still a landmark and forms an important part of the basis for military psychology and sociology.

Stouffer et al (1949) found that a majority of men in combat admitted to fear; were not overly concerned with issues of patriotism; did not hate unduly the enemy; prayed when they were frightened; and, believed in a code of masculinity. Loyalty to the group or unit was paramount to high performing units. High performing units were defined as units with low rates of nonbattle casualties. These units were those in which the men developed bonds of loyalty to the group; had favorable attitudes towards the officers; trusted in the medical care they would receive in battle and had pride in the unit's accomplishments.

But fear was ever-present. Officers and enlisted men in the Mediterranean said that combat became more frightening the more they saw of it (Stouffer et al 1949:70). Eighty-three percent of Stouffer's sample of 1,766 combat veterans in Italy in 1944 reported that they had seen a man overcome by fear. Those who observed that extreme manifestation of fear or "crack-up" reported that they were upset as well (Stouffer, 1949:208-209). This focus on overcoming fear is a direct outcome of the emphasis placed on the diagnosis of "shell shock" of World War I vintage and the growth of psychiatry and psychology in the 1920-40 period.

Continuing in the same intellectual tradition, the founders of military sociology Shils and Janowitz (1948)

interviewed German soldiers to determine why Wermacht soldiers fought against insurmountable odds; or, why units and individuals surrendered or ran away. They concluded that the following factors contributed to cohesive groups--those that stood and fought--: small group ties, physical proximity to other groups, devotion to Hitler, fear of retribution against one's family, belief in National Socialism, paternal protectiveness of senior NCO's and junior officers, and disbelief in enemy propaganda.

Those German soldiers who surrendered did so because their primary group ties had been broken. Some of these soldiers were isolated in bunkers or cellars with no ties to the larger group and lacked food, warm clothing and supplies. Others were Poles or Slavs with no ties to the German fatherland. Of the German nationals, some knew that their families' town had already been overrun by Allied or Soviet troops and there was no sense of defending their homeland for the sake of their families. Thus, these frightened, lonely, cold and hungry troops surrendered singly or in groups or waited huddled in their sleeping bags or hidden in bunkers waiting to be captured. But American researchers found that even victorious U.S. troops did not fight in a singularly united fashion.

Military historian, S.L.A. Marshall (1947) astounded U.S. Army officials with his finding that over seventy-five percent of U.S. soldiers in the European and Central Pacific Theatres in World War II did not fire their weapons, during combat. The element of trust or of loyalty to the group that Stouffer et al (1949) had found in the high performing groups was noticeably absent in most U.S. troops whom Marshall interviewed. Thus the soldier did not fire his weapon for fear of detection by the enemy. He also did not fire his weapon because he was not sure that his fellow soldiers would cover him or help defend the perimeter against the enemy. Combat effectiveness was degraded by this lack of trust or loyalty. Cohesion was absent.

Roger Little's (1964) insightful work on infantry platoon in combat and in garrison, during Korea further underscored S.L.A. Marshall's observations. Little's title, "Buddy Relations and Combat Performance" (Little 1964) provides the essence of his results. Men were closely bonded together as buddies during combat. These bonded relationships meant that men would fight together as a unit and thus live to another day.

The primary basis for solidarity in the platoon and company was the recognition of mutual risk. A set of norms so regulated their behavior as to minimize that risk.

(Little:1964:218).

Little (1964:213-218) also had some salient comments on the relationship between officers and soldiers. In garrison, the officers were removed from the men and were more concerned with the ceremonial aspect of army life. However, in combat, the officers lived with their men, shared their discomfort, and fears. The status differences became blurred in combat to such an extent that the officers allied themselves with their men and tended to ignore higher echelon requests.

On the line, officers were isolated from their status peers. When sharing the risks and hardships of their men they tended to develop solidarity with them and to support deviations from the norms of the larger organization, although their ultimate loyalty to the organization was effectively maintained.

(Little: 1964:219)

Over and over, research in military psychology and sociology in the U.S. and other Allied nations, reaffirms, time and time again, the interrelationship of small group ties, loyalty, bonding, esprit and combat performance. Yet, the majority of U.S. Army planners emphasize training, tactics, firepower and weapons systems and, if not ignore, at least downplay the issue of the socio-psychological effect of cohesion on high performance in battle. Fortunately, not all military analysts or members of the armed services ignore human factors in battle.

One theorist who is a noticeable exception to the emphasis on machines and weapons, Col. W.D. Henderson (1979;1985) has written two very interesting books on the issue of cohesion and battlefield performance. His 1979 book Why the Viet Cong Fought analyzes the reasons why the Viet Cong won in Viet Nam against a U.S. force with greater concentrated firepower and air and naval support. The U.S. inflicted five casualties for every one U.S. or Allied casualty.

One army endured, and the other did not...the North Vietnamese Army endured, maintained its cohesion, and remained on the battlefield when all others had retired.

(Henderson, 1979:xv)

Henderson's work refines the trailblazing participant observation research of Charles Moskos.

Moskos (1970) lived, marched, ate C-rations with and

interviewed enlisted men during the Viet Nam War. Following in the footsteps of Shils, Janowitz and Little, Moskos well understood that cohesion is a key element in the soldier's survival.

If the individual soldier is realistically to improve his survival chances, he must necessarily develop and take part in primary-group relations.

(Moskos, 1970:145)

He points out that the one year Vietnam tour which was thought to be the best manpower solution, was in reality a disaster from the point of view of developing cohesive units who are combat effective. Even though Moskos found the individual combat soldier to have high morale, he had misgivings about the one year tour. Men were rotated in and out of units as single replacements. Thus, a lieutenant might have three weeks experience, his sergeant two months and the men varying degrees of experience ranging from a few weeks to eleven months. Thus, the group had little primary group cohesion or loyalty and even more importantly had disparate amounts of actual combat experience.

Within the combat unit itself, the rotation system has many consequences for social cohesion and individual motivation. The rapid turnover of personnel hinders the development of primary-group ties as well as rotating out of the unit men who have attained combat experience.

(Moskos, 1970:142)

In a later paper, Moskos (1975) further developed his analysis of the deleterious affects of the one year rotation system.

Overall, the rotation system reinforced an individualistic perspective that was essentially self-concerned. The end of the war was marked by the individual's rotation date and not by the war's eventual outcome -- whether victory, defeat, or negotiated stalemate. Whatever incipient identification there might be with abstract comrades-in-arms was circumvented by the privatized view of the war fostered by the rotation system.

(Moskos, 1975:31).

Army psychiatrist, Peter Bourne (1970) was sure that

the one year tour was a decisive factor in a lack of group cohesiveness which, in turn, led to increased rates of psychiatric casualties. Twenty years prior to Bourne, Stouffer et al (1949), had already made a clear relationship between a replacement's integration to the group and the new soldier's subsequent combat performance.

The replacement who joined his unit in combat had two adjustments to make simultaneously: to his new outfit and to combat itself. Lacking established ties to buddies as well as experience in teamwork with them, he would appear to be at a distinct disadvantage in his first combat experience.

(Stouffer et al (1949:277)).

Research has repeatedly shown that there is a strong relationship between cohesion, soldiers' level of morale and combat efficiency (Ingraham and Manning, 1980,1981; Shils and Janowitz, 1949; Stouffer et al 1949). Stouffer et al (1949) provided the cornerstone for this link between cohesion and combat efficiency in their study of infantry men and bomber crews in World War II. They wrote:

(a)ffective ties binding the group together were important in keeping men in combat because, among other reasons, the group through its formal organization was inextricably committed to the fight: anything that tied the individual to the group therefore kept him in combat.

(Stouffer et al 1949:100).

Henderson defines military cohesion as follows:

Cohesion exists in a unit when the primary day-to-day goals of the individual soldiers, of the small group with which he identifies, and of unit leaders are congruent--with each giving his primary loyalty to the group so that it trains and fights as a unit with all members willing to risk death to achieve a common objective.

Henderson (1985:4).

Herein lies the crux of military cohesion. Disparate men from varied socioeconomic backgrounds, of different ethnic origins and levels of education are expected to become not just a collection of individuals but a unit in which an individual will sacrifice his life and die in

order to preserve the group. Because of well developed ties of friendship or camaraderie, men will fight individually as part of a unit to defend the group as a unit, its honor, or its combat efficiency. We are not referring to job efficiency, or meeting production quotas, or increasing the numbers of goals of a football team but death and dying for the good of the group. That's the essence of military cohesion. Because combat is a nasty brutish place to be.

Moskos (1975) describes the soldier's world.

In the combat situation, the soldier not only faces the imminent danger of loss of life and, more frightening for most, limb, he also witnesses combat wounds and deaths suffered by buddies. Moreover, there are the routine physical stresses of combat existence: the weight of the pack, tasteless food, diarrhea, lack of water, leeches, mosquitoes, rain, torrid heat, mud and loss of sleep. In an actual fire-fight with the enemy, the scene is generally one of utmost chaos and confusion. Deadening fear intermingles with acts of bravery and, strangely enough, even moments of exhilaration and comedy.

(Moskos, 1975:28)

Moskos (1975) repeated the contention of Stouffer et al (1949) that men fight as individuals as part of a fighting group so that the individual may survive and live. While friendship and the bonds of cohesion tie the men to each other, during a firefight with imminent death a possibility men fight and kill so that each one may live.

And, in peacetime, strong military cohesion has salubrious effects. Motowildo and Borman (1978) studied 614 U.S. soldiers from 47 platoons and 16 companies stationed in a foreign location. Their results indicated that units with high morale (as defined by a combination of scales) had less AWOL, drug abuse, numbers of serious accidents, sick calls, congressional inquiries and nonjudicial punishment than units with low morale. Motowildo and Borman's concept of "morale" is based on a series of surveys and interviews that tap the dimension of cohesion defined as "high morale".

Thus, we see that, for some researchers and theorists, morale is an element of cohesion or is the measurement of will. Cohesion is a combination of many factors. Cohesion is linked to the sense of belonging to the primary group, to the hierarchy of rank structure and to the society as a whole.

Military psychiatry has shown that the more cohesive

the group, the less psychiatric casualties there are in peacetime or in wartime (Bourne 1970; Gal, 1983, 1986a, 1986b; Ingraham and Manning, 1980; Marlow unpublished ms. n.d.; Milgram and Hobfall, 1986; Noy, Nardi, and Solomon, 1986; Price, 1984; Shaw, 1983; Solomon, Noy and Bar-On, 1986; Tiffany, 1967; Yager, 1975). In his study of U.S. Eighth Army pilots in World War II, Bond (1952) found that anxiety reactions and fatigue were directly correlated to danger of combat. Price (1984) states that psychiatric casualties for the U.S. were 23% for World War II, 6% in Korea and 5% in the early stages of Viet Nam and reaching a high of 60% during the drug epidemic of 1972 (Price, 1984:109). He also states that the extremely low rate (i.e. 2%) of psychiatric casualties among British troops in the Falklands War ...

was due to a number of positive factors. The use of elite units, short duration of combat, little exposure to indirect fire, an unopposed landing, and a consistently successful posture, all of which influenced the rate of psychiatric casualties in past American Wars.

(Price, 1984:112)

The Price quote illustrates that cohesion is only one element of winning a war. Supply, logistics, tactics, air superiority and medical care are all necessary elements of a victorious force. Cohesive patriotic groups with inadequate weapons and supply cannot win a war any more than well supplied troops with no will to win. But in all wars at all times it is the man on the ground who trusts his buddies and who believes in his officer's competency who wins the war. But the individual soldier does not win the war --the unit or group does. And the more cohesive the group, the less the nonbattle casualties.

Israeli research has built on and refined the U.S. findings on the link between cohesion and psychiatric casualties. The Israeli Defense Force (IDF) is well aware of the value of cohesion, morale or esprit in reducing psychiatric casualties.

Israelis know that manpower is the most important resource of their fighting force because their small nation cannot field an effective army with a high rate of battle and nonbattle casualties. Col. (R) Reuven Gal, former Chief Psychologist of the Israeli Defense Force has written extensively on this subject (Gal, 1986a; 1986b). Gal feels that morale is not a criterion (or predictor) variable but one of eight unit climate factors which comprise a broader construct which he calls "unit climate". The eight factors that he developed were related to confidence in leaders, peers, weapons and oneself, relationships with one's

leaders and peers and fear variables such as worries about combat aftermath and concern about the enemy (Gal, 1986b:563). Gal's research on Israeli heroes shows that the more cohesive is the group the more the group and individuals will perform heroic acts in battle.

Gal (1983) studied those soldiers in the 1973 Yom Kippur War who received Israel's Medal of Honor. He states: "Israeli heroes, then, are not a distinct species. Apparently, they are not born heroes, they become heroes" (Gal, 1983:88). Gal feels that results of the study indicate that men who are bonded to their unit will perform acts of heroism.

A more careful examination of the characteristics of the Israeli cases reveals the predominance of the "social" element in the behavior of these heroes. In three out of four situational categories the awarded acts were carried out not while the hero was alone, but in the presence of others, most frequently his unit members. Almost half of the cases involved the risk of one's life for the sake of the survival of others...group morale and cohesiveness, as well as the sense of commitment to one's unit and friends, play a major role in instances of combat gallantry in general...and in the Israeli instance in particular.

(Gal, 1983:89-90)

Again, we see that men who know each other, respect each other, have confidence in their leaders and believe in their cause are better braver combat soldiers.

Steiner and Neumann's (1978) study on (IDF) tank crews showed a conclusive link between the concept of unit cohesion and combat efficiency. They studied two different types of tank crews: those who fought as distinct units and those tank crews comprised of individuals who came willy-nilly to the staging area and were sent hastily to the front. This action was contrary to Israeli training and doctrine and had dire manpower consequences.

IDF tank crews train and fight as units. But the 1973 Yom Kippur War caught the Israelis by surprise. Several of the IDF reserve armor units were sent precipitously to the front lines before forming their normal combat teams. Hence, many tank crews found themselves fighting battles with men whom they had met scarcely a few hours previously. Steiner and Neumann found that the tank crews of strangers compared to intact crews had a higher incidence of battlefield stress casualties and post-traumatic combat

reactions. This result is all the more astonishing given that the the control group of intact crews experienced more intense battles, were under heavier fire, were short in equipment and had heavy losses.

Israeli military researchers are interested not only in battle stress casualties but also in post-traumatic stress casualties. Because Israel has a severely limited manpower pool which is called on again and again to deploy rapidly, the nation cannot afford to have trained soldiers incapacitated by post-traumatic stress (PTSD).

Solomon et al (1986) studied combat stress reactions (CSR) among a group of 382 Israeli soldiers during the 1982 Lebanon-Israel War. This group was compared with carefully matched controls who did not develop CSR. They studied the effect of feeling of loneliness or isolation in battle and CSR. Solomon et al concluded that lack of social support from officers and/or buddies contributed to greater feelings of loneliness and higher likelihood of CSR. Intensity of battle also led to increased loneliness and increased incidence of CSR. However the lack of social support also may lead to a perception of a more intensive battle than there was in actuality (Steiner et al 1986:1269).

Solomon, Noy and Bar-On (1986) found that men in the IDF reserve forces were more likely to have psychiatric or nonbattle casualties than active army troops. They concluded that there were five reasons for the difference between the casualty rate between reservists and regulars: reservists are older and are not physically as fit as younger regular troops; have been in several wars and have weakened resilience to stress reactions; are forced to make a more dramatic transition from peacetime to wartime; have a greater sense of responsibility to their wives and children; and, have less cohesion among their groups. Because IDF reservists come from different geographical areas of Israel and from varied socioeconomic backgrounds, the groups are disparate in a demographic sense. Thus reservists fight with "strangers" and active troops with the same men with whom they live during peacetime.

Building on their previous research, Noy, Nardi and Solomon (1986) analyzed the performance of four Israeli battalions. They state that group cohesion and leadership are buffering variables that can lessen the number of psychiatric casualties. Furthermore, they feel that their work shows that it is feasible to predict a unit's susceptibility to psychiatric casualties knowing the units cohesiveness, leadership styles and the anticipated battle conditions. Group cohesion and leadership will explain the covariance between direct casualties and nonbattle casualties.

Unfortunately most of the psychiatric and psychological literature dealing with combat stress or post-traumatic stress disorder (PTSD) has serious methodological flaws. In an unpublished paper, Stewart and Weaver (1987) discuss the lack of replication, the use of small numbers of subjects, little use of control groups and variation in definition of terms to illustrate the severe statistical and methodological defects of this body of research. A review of this literature, inadequate though it may be, indicates that some of the factors leading to combat stress or post-traumatic stress are the following: lack of confidence in leaders, pre-existing personality disorders, adverse life events, fear of loss of one's own life, grief and loss of comrades, lack of group cohesion, lack of morale, lack of motivation, guilt of survival, guilt over killing people, being a new member of a unit, lack of self esteem, lack of self confidence, sense of helplessness, lack of social support, alcohol or drug use and abuse, severity and intensity of combat exposure, exhaustion and fatigue, hostile climate (jungle or arctic), unfamiliarity with mission or terrain, no forward psychiatric treatment, inability to return fire, isolation, loneliness, defensive military posture, lack of belief in legitimacy of the war, physical discomfort, pain, one year rotation schedule, low level of education and enlisted rank (Stewart and Weaver, 1987 unpublished ms).

The task of leaders in training, garrison, field exercises and finally in combat is to recognize that these are elements that will cause stress and psychiatric breakdown in troops. The job of the trainer and the combat leader is to meet these problems before they occur. Many researchers and military officers agree that any man over a long period of time will definitely suffer combat stress, particularly if the conditions of climate, combat, exhaustion, lack of food and sleep are continual. Major General Vaux commenting on the state of his troops, in the South Atlantic conflict of 1982, before the assault on Mt. Harriet, wrote,

By now there was evidence of real suffering among the troops in the rifle company positions. I could see that if we endured too long in these mountains, we might not be capable of a major attack at the end of that time. Moreover, our patrols were now going to have to fight for the intelligence we needed to plan the main assault. That would require leadership, initiative, aggression and stamina, from increasingly weary and weakened junior leaders and marines. The self-confidence and determination with which we had landed were now being eroded ominously.

Morale and fitness are like bank accounts--incessant withdrawals must be compensated for eventually.

(Vaux, 1986:139)

Vaux wrote that high morale and "determination" were important factors in the cohesive spirit of his troops. In the preceding discussion on Israeli and U.S. research, there is an implicit assumption on both the Israeli data and the U.S. findings that the soldiers who withstand stress must be committed to a principle of patriotism, just war, ideology, or, belief in the nation's principles. Researchers refer to this kind of integration as "integral" or "organizational" cohesion.

Quite the opposite may be true. There is a dark side to cohesion, as the U.S. discovered in Viet Nam. Cohesive units may oppose a war, or be united in opposition to leaders or the conduct of the war. Cohesive units may have an active drug sub-culture; engage in anti-war activities and attempt to kill officers or NCO's; and, have high rates of AWOL, or desertion. But these activities run counter to the aims of the nation, the army or the purpose of the war. Such behavior detracts from combat effectiveness. By definition this kind of bonding of the group or intellectual doubts of the individual soldier in the rightness of his cause run counter to the definition of "military cohesion".

Shalit (1985) discusses the psychological problems of loss of structure, confusion, alienation, fear, poor cohesion and leadership problems attendant on Israel's 1982 War with Lebanon. Shalit states that the fact that compared to a 1969 social status ranking of occupations the military rank lower today illustrates that the military have lost a great deal of their previously high prestige (Shalit, 1985:10). He states that in 1967 and 1973 the percent of psychological injuries was 5-8% of the total force. During the Lebanon war, the incidence of psychological casualties was 23-25% Shalit (1985:12). He concludes from anecdotal discussions with troops and civilians that the Lebanon War of the 1980's covered Israel with shame and that the soldiers' confusion about their role and behavior in Lebanon contributed to the high rate of psychiatric casualties, loss of social status, loss of cohesion amongst troops and leadership problems.

Gal does not agree with Shalit that morale was low. In a very perceptive paper on commitment and obedience in the Israeli Army, he states that IDF

combat troops continued to maintain high morale, despite the increasing criticism

directed to the legitimacy of the Israeli presence in Lebanon, as long as they perceived their commanders as trustworthy and competent.

Gal (1985:560).

Therein may lie the key to Gal's disagreement with Shalit in the respondents' perception of the commander as "trustworthy and competent". It may be that those soldiers interviewed by Shalit were precisely those who did not trust their commanders. However the Gal paper is interesting because it discusses the concept of mutinies, and the dilemma of a commander to obey or disobey orders which he may consider to be militarily unsound or politically stupid.

Nevertheless, Shalit's statements about the problems inherent in the incursion into Lebanon and Gal's 1985 case study on the ethical, political, and tactical disagreements of one high ranking Israeli officer do point out the varying tugs and pulls an enlisted man or officer must resolve in war. These Israeli ethical dilemmas sound remarkably familiar to Americans who lived through the emotional roller-coaster of the Viet Nam War. Bourne (1970) discusses some of the issues surrounding soldiers' views of the Viet Nam War against the backdrop of protest and anti-war activity in the United States and among American troops in Viet Nam.

Stouffer et al (1949) found that American soldiers said that patriotism had little to do with fighting or defending a perimeter or foxhole. They fought to live to another day. Or so they said. But when Stouffer and his researchers continued to probe and seek reasons for the soldiers' combat performance patriotism was indeed an important factor in determining the will to endure and the will to fight. Stouffer's research indicated that those nationalistic or patriotic values were difficult for the soldier to articulate but nonetheless were a salient factor in his ability to withstand the rigors of war.

Thus we see that the soldier (or NCO or officer) is bonded to his peers, to his subordinates and superior officers and to the principles of the nation as well. Cohesion, therefore, is a multi-dimensional concept. We need some precision in our definition of what is military cohesion.

That methodological precision is supplied by work done at the U.S. Army Research Institute for the Social and Behavioral Sciences (Holz, 1986; Oliver, 1987; Siebold, 1987a, 1987b; Siebold and Kelly; 1987a; 1987b). Siebold and his associates have delineated three types of cohesion: vertical, horizontal and organizational. The U.S.

Army Research Institute research shows that an open organizational climate and nurturing (caring) commanders leads to high levels of morale, cohesion and competence. Siebold and Kelly (1987b) found a direct correlation between cohesion measures and unit performance. Other U.S. Army researchers have found similar results (Furukawa et al, 1987; Griffith 1986a, 1986b, 1986c; Griffith and Chopper, 1986a, 1986b; Hoover and Griffith, n.d.; Ingraham and Manning, 1980, 1981; Marlow et al, 1985; Van Straten and Kaufman; Westbrook, 1980; Wray, 1987).

In an excellent monograph from Walter Reed Army Institute of Research, Furukawa et al 1987 delineated the issues of military cohesion.

Military unit cohesion is a complex concept. It is the product of (a) bonding of equals (soldiers with each other), (b) bonding of superiors and subordinates, (c) bonding and affirmation of the special properties of a group (a team, a crew, a platoon), and (d) a set of perceptions of the skills and abilities of oneself and others.

Cohesion processes are both emotion-laden (affective) and task-oriented (instrumental). The metaphors that combat personnel use in describing their relationships are those of love, kinship, and fraternal bonding. These metaphors are rooted in perceptions of the degree to which the skills, competencies, and interpersonal linkages of oneself with others ensure survival of both oneself and the group. We group these perceptions under the term "psychological readiness for combat."

Psychological readiness for combat comprises five dimensions, including horizontal cohesion, vertical cohesion, individual morale, confidence in group combat capability, and confidence in leaders. These dimensions of psychological readiness provide the soldier with supportive relationships that mediate the effects of stress. They provide the soldier with a psychological "armor" of strength and competence, through the instrumental and affective bonds that increase his odds for safety and survival in a hostile environment.

(Furukawa et al 1987:2)

In sum, this review of the literature shows that military cohesion consists of three major elements:

1. relationships between peers (horizontal)
2. relationships between subordinates and superiors (vertical).
3. relationship to the military as an organization or unit (organizational).

But we cannot examine the soldier solely on the micro or small unit level and ignore the social, cultural, economic and political heritage of his nation. Therefore, we include a fourth type of bonding:

4. relationship of the military and the individual to the society or culture at large.

Horizontal or peer bonding involves building a sense of trust between officers or between NCO's and between soldiers. Some elements contributing to peer bonding are the following:

- (a) Sense of mission.
- (b) technical and tactical proficiency
- (c) Lack of personnel turbulence
- (d) teamwork
- (e) trust, respect and friendship

Vertical bonding or the relationship between subordinate and superior (and superior to subordinate) involves the relationships between soldier, NCO, and officer. Some characteristics of vertical bonding contributing to military cohesion are the following:

- (a) An "open " (versus "authoritarian") organizational climate.
- (b) leader's concern for the men.
- (c) Leader example.
- (d) Trust and respect for leaders
- (e) Sharing of discomfort and danger.
- (f) Shared training.
- (g) Appropriate level of social distance.

Organizational bonding or the relationship of the soldier or officer to the military as an organization or unit has the following characteristics:

- (a) Loyalty to the nation and its values.
- (b) Patriotism.
- (c) Military tradition and history, high status
- (d) Strong religious belief.
- (e) Well defined concept of valor, heroism, masculinity

Morale, or esprit or will-to- fight are are often used as interchangeable terms with the word "cohesion".

However, we view the concepts of " morale," " fighting spirit" "will-to win" as interdependent with cohesion. Units with high cohesion have high morale. Morale is a factor associated with and intrinsic to cohesion. Unfortunately, military historians and most social scientists use varying, imprecise and fuzzy definitions of cohesion, military cohesion , morale and command or unit climate. The best attempt at precise definition is the quoted section from Furukawa et al (1987).

The literature review also indicated that the higher the military cohesion :

- the less nonbattlefield casualties in combat
- the more soldiers will fire their weapons in combat
- the less desertion in time of war
- the more valiantly soldiers will fight
- the less AWOL, drug addiction, alcoholism and sick calls in peacetime.

Military cohesion is a special bonding which implies that men are willing to die for the preservation of the group or the code of honor of the group or the valor and honor of the country.

Military units with high cohesion are more combat effective than units with low cohesion. However other factors such as tactics, supply, logistics, weather, medical facilities, physical fitness of the troops and training all contribute to combat effectiveness. We call such factors cultural or societal.

Societal factors which impinge on military cohesion are those of society's attitudes towards the military, in general, or, towards a particular war in the sense that an adequate defense budget exists for training of men, purchase of supplies and armament and staffing of military hospitals and training of officers and men. All the high level of morale and all the will to win combined with officers and men who trust each other will come to nought if the men have no weapons or no food. If the political will is absent or political strategy is incorrect, the military strategy will also suffer. Or if the level of technology of the war has an imbalance, the troops are doomed. World War II Polish officers using cavalry charges against German tanks may illustrate cohesion amongst Polish officers but was to no avail.

Thus some societal factors contributing to military cohesion and effectiveness are the following:

- (a) Culture, norms, values and organization of the military
- (b) Size of Defense Budget

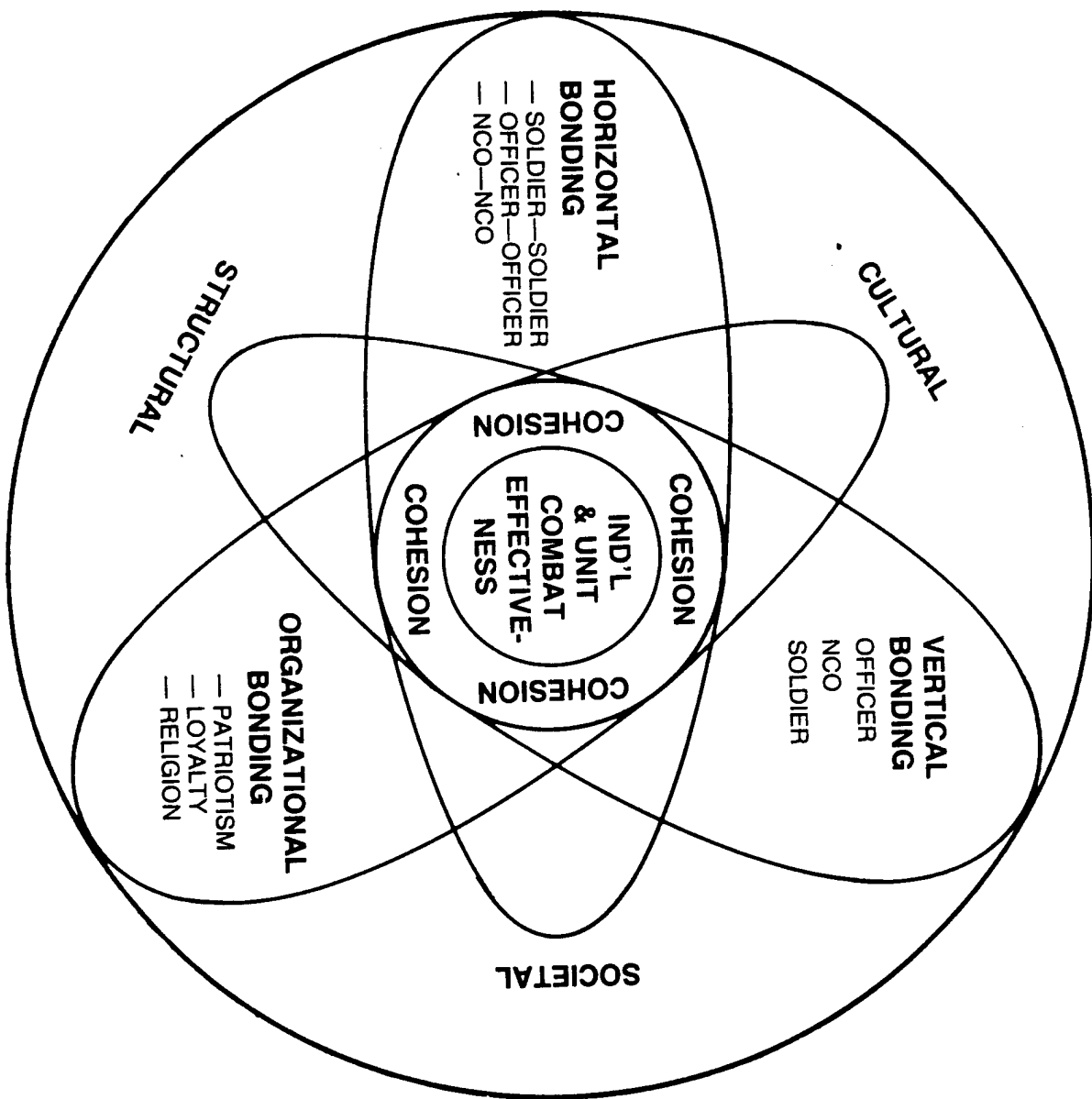
- (c) Doctrine and Strategy
- (d) Training
- (e) Tactics
- (f) Command, Control, Communications and Intelligence
- (g) Logistics and Supply and Technology
- (h) Medical care and facilities.

Military cohesion is part of and embedded in the society's norms, values, mores and cultural ethos. Fig. 1 illustrates the interrelationship between the three major facets of military cohesion (vertical, horizontal and organizational), how these three elements are embedded in and dependent on the societal and cultural ethos and the ultimate effect of these interrelationships upon individual and unit combat effectiveness.

FIGURE 1 HERE

Using this review of literature dealing with military cohesion, we found four major dimensions of military cohesion (vertical, horizontal, organizational and societal). Within each one of these four parts of military cohesion, we found references specific to their effect on that type of cohesion.

We developed a model of cohesion based on these four elements of cohesion and derived variables pertaining to (and in some cases overlapping) these four parts.



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REVIEW AND CRITIQUE
OF RESEARCH ON STRESS REACTIONS:
PROBLEMS IN METHODOLOGY

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Introduction

Military psychiatrists and therapists have long been interested in battlefield disorders to describe the delayed reaction to combat in Vietnam. The reaction was referred to as shell shock during World War I, combat fatigue during World War II, and combat stress in Vietnam. Currently, the more familiar term of "post-traumatic stress disorder" is widely used. Researchers have focused on various aspects of combat stress reaction (CSR) or post-traumatic stress disorder (PTSD) to determine if there are measures such as selection, training, or leadership that can be taken to alleviate CSR or PTSD.

Some of the factors described in these studies are: age, race, loneliness, guilt, and the physical conditions of the war. While most of these factors are thought to have a direct relation to the onset of CSR and PTSD, some are also thought to have mediation effects. U.S. research from the Second World War (Stoufer et al., 1949; Shils and Janowitz, 1949) indicated that group cohesion contributed to a lessening of combat stress reactions. Building on U.S. findings, Israeli research (Dasberg, 1975; Gal, 1986; Gal, 1983; Levac, Greenfeld, and Baruch, 1979; Levy and Neumann,

1984; Mester and Hazan, 1984; Noy, Nardi, and Solomon, 1986; Saigh, 1984; Solomon, Mikulincer, and Hobfall, 1986; Solomon, Oppenheimer, and Noy, 1986; Steiner and Neumann, 1978; Toubiana, Milgram, and Noy, 1986) reaffirmed the fact that more cohesive units have less stress reactions and were more effective fighting units.

Andrews, Tennant, Hewson, and Valliant (1978) found that a relationship exists between adverse life events and the severity and occurrence of the symptoms of stress disorders. Cohen and Hoberman (1983) found a relationship between life stress and the symptoms associated with stress reactions. The incidence of heavy alcohol consumption is also related to the severity and length of combat exposure (Branchey, Davis, and Lieber, 1984). In addition, Lund, Foy, Sipprelle, and Strachan (1984) were able to relate combat exposure and pre/post-war adjustment to the severity of PTSD symptoms. Clearly, research findings indicate the existence of relationships between stress, stress reactions and life events.

However, despite the conclusions made by many researchers, the research supports few of their findings. The majority of studies in the area of CSR and PTSD suffer from statistical and methodological improprieties which detract from, or completely obviate, any conclusions that can be drawn from these research reports. Such case

studies, reports or experiments may in themselves indicate interesting avenues of research but are not methodologically sound. Findings of one group of studies often challenge and refute the conclusions of others. Solomon, Mikulincer, and Hobfall (1986) regard the study of troop cohesion and breakdown as "more folklore than scientific fact". They further state:

Observations by experienced, well-trained mental health professionals and militarists should not be set aside, but they do not, however, constitute scientific support. Nor do empirical studies of PTSD and social support provide clear answers to the question of CSR. (p. 1270).

For example, group cohesiveness is examined as both a buffer against excess stress (Hobfall & Walfisch, 1984; Noy, Nardi, & Solomon, 1986; Cohen & Hoberman, 1983) and as having a direct effect on stress (Solomon, Mikulincer & Hobfall, 1986; Cohen & Hoberman, 1983). The literature supports the buffering hypothesis as well as the direct effect hypothesis of cohesion. There are diametrically opposed findings as to which variables have what effect on combat stress.

Among the studies of several variables thought to be influential in PTSD, there are evidences of conflicting findings. While some studies concluded that combat exposure

and the intensity of combat have a direct influence on the onset of PTSD (Kolb, 1983; Lund, Foy, Sipprelle, & Strachan, 1984; Noy, Nardi, & Solomon, 1986; Shatan, 1982; Shaw, 1983; Yager, Laufer & Gallops, 1984), others have found an indirect effect or no effect at all (Boman, 1986; Steiner & Neumann, 1978). Researchers present discrepant results on the one-year rotation schedule during Viet Nam. Another area of research plagued with inconclusive results and opposing findings is that dealing with pre-existing personality characteristics. While it is not unusual for discrepancies to occur when dealing with a new topic of research, many may be the result of a lack of precision in definitions. It is precisely these types of discrepancies that researchers should strive to resolve.

Let us now turn to a detailed analysis of our study.

Universe and Sample for This Review

Using various computer data bases (MEDLINE, DROLS, Aerospace Data Base, PTS Aerospace Data Base, PSYCHINFO, NTIS, and newspaper, magazine and books indexes) and lengthy bibliographies from the Veterans Administration Vietnam Outreach Office, we obtained a list of 87 articles in English dealing with combat stress and post-traumatic stress. We eliminated 27 papers which were reviews, speeches or overviews and eleven which were not related to

military or combat experiences. Thus a total of 49 articles concerned with the issue of post-traumatic stress or combat stress reaction formed the basis for our study. 24% of the papers dealt with the Israeli Army, 2% on the experiences of the British in the Falklands 1982 campaign, and the remaining 73% dealt with the U.S. Army.

Sample Sizes

Sample sizes for the forty-nine studies ranged from a single subject to more than 500 subjects. Figures 1 and 2 show the distribution of the number of subjects per sample. Although 20% of the studies had unreported sample sizes, 48% had fewer than 100 subjects, and 36% had fewer than 50 subjects. Solomon, Mikulincer, and Hobfall (1986) share our concern about the subjects used in many of the studies on PTSD. They state:

...studies of PTSD are mixed between those using subjects who suffered CSR during combat and those using subjects who developed symptoms after combat. In addition, most studies of PTSD have used small samples of individuals who have turned to Veterans Administration hospitals for care and potential financial compensation. The difficulty of achieving large, generalizable samples has required these researchers to make tremendous efforts to gain even these samples. (p. 1270).

The result is that small sample sizes lead to poor research generalizability. Many of the samples consisted of

one, two or maybe ten case studies (as denoted by "CS" in Appendix A). Bey (1972) suggested that the stress of impending separation from the family, estrangement and the one-year rotation schedule in Viet Nam may be factors leading to PTSD. While these factors may be important, the credibility of these suggestions suffers because the study itself consists of only one case study. Similarly, Cavenar and Nash (1976) assumed that pre-existing personality traits do not affect the onset of PTSD based on their experiences with only six case studies. Also based on the six case studies, they concluded that anyone can develop PTSD. Another glaring example of extrapolating to the population as a whole from extremely small sample sizes is Glover's 1984 article. He reported on only two case studies. However, he concluded that there are three factors (the war experience, society's negative response to the war, and psychosocial development) that lead to mistrust in Vietnam veterans.

Kleiger (1984) is one of few authors who studied PTSD sufferers who are currently serving in US forces. He found that all three of his subjects had impressive military records, and further discussed a "unifying theme" among them. This theme concerned the presence of symbolic stimuli which "served to exacerbate their chronic symptomatology". One must question the significance of such findings when

they are based on three people, all of whom are experiencing similar circumstances.

Despite much controversy over the role of pre-existing personality in PTSD, one case study led Kolb to state that pre-existing childhood neuroses creates a predisposition for neuroses in reaction to stress and a lesser capacity for adaptation to that stress. Shaw (1983) presented a comprehensive review of the many factors (combat intensity, terrain, weather, cohesiveness, physical exertion, communication, supplies, tactics, fatigue, tension, morale, leadership, age, physical ability and education) studied in regard to PTSD, yet only one case study was presented as support. Generalization is acceptable on the basis of small sample sizes when there are many studies that have come to the same conclusions. However, there are few instances, if any, where there are a sufficient number of studies for this option to be a viable alternative to large sample sizes. There are too many opposing findings to make generalizing a possibility.

The problem of generality is evident also in the literature on therapy and symptomatology. Hendin (1983) found psychotherapy to be successful in the treatment of PTSD based on three patients. A study by Hendin, Haas, Singer, Gold, Trigos, and Ulman (1983) reports one representative case study. This study discussed symptoms of

PTSD, pre- and post-combat experiences and the nature and extent of combat. It is remarkable that only one case study could accurately represent all of their findings. Clearly, the problem of using small samples and "representative" case studies to make general conclusions exists. Case studies are effective in pointing toward possible directions for future research. However, case studies must not be used for the confirmation of hypotheses. It is important to have a larger sample size that is representative of the whole population, not just a portion of that population.

Sample Composition

Perhaps even more problematic is the fact that most of the subjects are patients in psychiatric facilities. Those who are inpatients can be expected to have more extreme reactions and other disabling problems. To conclude that post-traumatic stress disorder often accompanies other psychiatric illnesses on the basis of inpatient surveys (Behar, 1984) is misleading. Bey and Zecchinelli (1974) have discussed several commonly found contributing factors to PTSD in a sample of psychiatric patients. These factors included the use of alcohol or drugs, a history of impulsive acts and poor attitudes, the age of the soldier, and being in a hostile and deprived environment during the

war. They concluded that these factors may be significant factors in the onset of PTSD. However, such predisposing factors may also be confounding factors leading to more severe cases of PTSD, not causal factors in and of themselves. Because Bey and Zecchinelli (1974) are dealing only with patients, we are unable to determine if the factors are common to all patients with PTSD and not to persons without PTSD. It is not enough to find common factors among PTSD patients, one must also find the differences between PTSD patients and other veterans without PTSD. By studying only patient populations, the sample is quite obviously skewed.

Lund, Foy, Sipprelle, and Strachan (1984) related combat exposure and military adjustment to PTSD, based on a sample of PTSD patients. However, they failed to find out if these factors differentiated the PTSD patients from other veterans who were not suffering from PTSD. If both groups were found to have experienced the same factors, it would disprove any causal relation to PTSD. Similarly, based only on a sample of ten inpatients suffering from PTSD, Sudak, Martin, Corradi, and Gold (1984) identified certain pre-military personality factors (maternal deprivation or loss, parental neglect or abuse, low self-esteem, poor impulse control and history of delinquent behavior) as the possible etiological influence for PTSD.

Yet, they based their conclusions solely on PTSD patients. Thienes-Hontos, Watson, and Kucala (1982) found that stress reactions are not more common among Vietnam veterans than among other war veterans. They compared a group of Vietnam veterans with a group of veterans from the Korean War. Again, all subjects had psychiatric problems, thus prohibiting any chance of differentiating between causal and confounding factors.

Generalizing to the whole population on the basis of people within a psychiatric facility is unjustifiable. Certainly those who consult physicians are a biased group merely by the fact that they have sought help while others have not. Only by comparing those persons without psychiatric diagnoses with patients in mental hospitals can researchers determine any unique characteristics of the patient population that may be significant to the onset of PTSD.

Control Groups

Figure 3 illustrates the overwhelming lack of control groups present throughout the studies reviewed. 82% of the studies had no control subjects at all. This glaring omission is surprising, since control groups enable a researcher to distinguish readily between factors and their effects. (For a graph of the comparison of sample sizes

with control group sizes, see Figure 4.) By controlling for predisposing factors and factors reflecting individuality, such as race, age, family background, marital status, and pre-existing psychiatric illness, one could determine the effects specific to combat exposure and the significance of those effects.

Although Boman (1986) stated that PTSD can occur in those who had not been exposed to combat and those who had not served overseas, his conclusion does not rule out a link between combat exposure and PTSD. His research merely demonstrated that the link may not be specific to combat. Bourne and Duy San (1967), who compared US and Vietnamese soldiers, concluded that the one-year rotation schedule may not be a factor in PTSD because the Army of the Republic of Vietnam (ARVN) had few psychiatric cases without the rotation policy. However, in dealing with the very different cultures of the US and Vietnam, problems could arise as to the diagnostic criterion, views toward war, amount of combat exposure, and types of weapons, which could render the findings of the study invalid. Only by comparing carefully controlled matched groups can a conclusion be reached regarding the rotation of soldiers.

When researchers seek to study personality characteristics which predispose an individual to PTSD, control groups are essential for definite conclusions

generalizable to the population as a whole. Cavenar and Nash (1976) stated that pre-existing personality traits are not causal, and therefore, anyone can develop PTSD. Others, however, stated that pre-existing personality plays a distinct role in the onset of PTSD (Bey and Zecchinelli, 1974; Glover, 1984; Hendin, Haas, Singer, Gold & Trigos, 1983; Kolb, 1983; Sudak, Martin, Corradi & Gold, 1984; Yager, 1975). Controlling for these factors will help to determine if they do have an effect. It is important to understand the part that combat plays in stress disorders, since this factor is more easily manipulated than are demographics and other predisposing factors. Individual differences cannot be avoided, yet situational and environmental factors can be regulated to some extent to provide the best atmosphere for promoting cohesion and decreasing stress.

It is not only important to have control subjects, but also to ensure they are as similar as possible to the experimental subjects. Simply comparing two different samples, as in the case of Steiner and Neumann's (1978) article which compared a special task force with a regular combat troop, does not provide a valid comparison and may lead to unjustified conclusions. In this specific article, conclusions were made concerning the effects of combat, even though the two groups had experienced

different amounts of exposure to combat and had many differing psychological factors which were not under the control of the experimenter. Thus, the need for an equivalent comparison group is clearly evident.

Boman (1986) also based his study on the comparison of two dissimilar groups. He compared veterans with combat exposure and overseas service with those who had not seen combat or gone overseas. No attempt was made to match these groups to eliminate the possible confounding variables. Boman (1986) found that PTSD can occur regardless of combat exposure. However, this does not conclusively disprove the link between PTSD and combat exposure. Other factors may cause PTSD in those persons without combat exposure, but combat exposure could still be a causal factor in those persons who had experienced combat. The use of a control group could help to better delineate the relationship between PTSD and combat exposure.

The Bourne and Duy San study (1967) did not account for cultural differences between the U.S. and Vietnam. It is very possible that each cultural group had its own diagnostic criteria, which differed from the other group's criteria. The result could be smaller or larger numbers of casualties in comparison with each other. The authors also ignored the fact that the ARVN were fighting to protect their homeland, highly different from the U.S. soldier's

situation. Soldiers more involved in the war cause may not be as susceptible to war stress. The rotation policy still may affect the US Army. A more rigorous study would include four groups: U.S. military with psychiatric symptoms, a U.S. military sample of men without psychiatric symptoms, and two similar comparison groups of Vietnamese. Thus, the effects of the rotation policy cannot be determined from the results of this study.

Although there is difficulty in obtaining matched subjects, matched samples lend themselves to statistically powerful analysis. To avoid making irrelevant generalizations, researchers not using controls should be sure to emphasize that their findings apply only to the specific population studied.

Retrospective Nature of the Studies

Most of the studies reviewed in this paper are based on subjects' recollections of past traumatic events. There is little opportunity to conduct research on war veterans immediately following a war experience, so researchers must often rely on a subject's recall to evaluate stress at the time of the event being investigated. The delay in the onset of most post-traumatic stress disorders increases the

problem of having to evaluate events long after their occurrence. Solomon, Mikulincer, and Hobfall (1986) discussed this problem in their study. Soldiers may attribute their stress reaction to external factors in order to avoid the "blame" for their own illness (Solomon, Mikulincer, & Hobfall, 1986). This problem can be somewhat overcome by performing longitudinal studies which would allow for the testing of people at high and low stress times to determine the effects of stress, social support systems, and cohesion. However, it is not possible to evaluate combat stress levels during the course of an ongoing war, thus eliminating the possibility of a longitudinal study when dealing with combat. In order to get a more precise measure of stress levels after events, researchers must be willing to develop instruments with a sufficient number of items which adequately cover the domain. The greater the number of items used to assess the levels of stress, the better the refinement and higher the accuracy.

The ability to determine cause and effect is also hampered when relying on the recall of the subjects. Memory lapses may alter the event or its sequence. Soldiers asked to recall their perceived levels of support or stress may develop their appraisals before, during, or after the occurrence of their illness (Solomon, Mikulincer, &

Hobfall, 1986). Retrospective studies also lack the ability to quantify accurately levels of stress and its causes and results since such measurement was not possible at the time the stress occurred.

Determining cause and effect is a difficult problem for researchers to overcome. However, Helzer (1984) suggested that extreme events with the most vivid memories are least likely to be forgotten and recommended studying such events. More extreme events are also more likely to be better documented by the media than are those of lesser impact, thus providing an opportunity for checking the recall of the subjects.

Definitions of Variables and Criteria

Specific definitions of variables and criteria are necessary for the comparison of results. The lack of universal definitions for variables such as "high stress", "social support" or "combat severity", may be responsible, in part, for many discrepant results. Often, a variable has different meanings for different researchers, which leads to the problem of discrepant findings. A prime example of incongruent definitions is that of "severe stress". Helzer (1984) defined the most severe stress as that in which a soldier is exposed to direct combat and injury. Yet Price (1984) defined severe stress differently. Price's study of

the British in the Falklands War led him to conclude that indirect fire, especially constant artillery overhead, is more stressful than participating in direct combat. There is further evidence by Yager (1984) that participation in abusive violence will have different amounts of stress-related effects depending on race. Clearly, there is a need for specific and consistent definitions. It is possible that researchers are studying more than one phenomenon, all of which are labeled with the same name.

Because of the vast number of attempts to clarify and differentiate PTSD from other disorders, there are many different and sometimes opposing criteria used in defining PTSD. For instance, the criteria for diagnosis of PTSD were brought into question by Barr (1985). Barr's study found a high prevalence of many symptoms, such as depression, irritability, and memory and concentration problems, among Vietnam veterans with PTSD that were not included in the Diagnostic and Statistical Manual (3rd Edition) criteria. This disagreement adds to the possibility of having discrepant findings based on different diagnostic criteria. Chaney, Williams, Cohn, and Vincent (1984) reported that the MMPI can be used to differentiate between PTSD, functional disorders, organic disease, and malingering. Greenberg, Pearlman, and Gampel (1972) discussed the ability to rank samples of PTSD subjects according to their

rapid eye movement (REM) latency. Laufer, Brett, and Gallops (1985) proposed that a dual disorder model may more accurately capture the range of PTSD phenomena. According to them, the prevalence of PTSD may be underestimated because the DSM-III criteria may not identify the different varieties of PTSD, since DSM-III aggregates the symptoms instead of differentiating among them. Thus, the inability to agree on diagnostic criteria may lead to widely divergent research results.

The research reviewed in this paper lacks operational definitions. Operationalization allows for comparability among the studies. By detailing the measurement of variables, replication of research is enhanced. Replication would, in turn, help to resolve some of the current disputes over the effects of several variables. Defining the variables clearly is especially important in a new field of study since those definitions will serve as the basis for future research in the field. With this in mind, researchers should present detailed information to enable future researchers to test the same phenomena without the problem of incompatible definitions.

Use of Correlational Data

Researchers in the area of cohesion seek to find the significant factors leading to more cohesive units. Social

support reduces stress reactions. Correlations determine if a relationship between two variables exists. This analysis is very useful as a starting point in the search for causal factors. However, correlational data alone does not indicate cause and effect. Researchers must undertake further analyses, such as path analysis, structural equation modeling, or regression analysis, to determine cause and effect. Stress reactions are less frequent in war when there is a greater amount of cohesion among the troops, yet, one cannot determine if the cohesion causes the reduction in psychiatric casualties. There is also the possibility that the increase in psychiatric casualties leads to decreases in cohesion. Obviously, there is a need to clarify this situation.

In order for researchers to clarify cause and effect relationships, further analysis is needed. The use of controls is helpful in determining causal effects. Experimentally, studies performed in controlled situations are more likely to demonstrate cause and effect. Because laboratory situations can only approximate the most minimal stress levels associated with combat, few controlled experiments are possible. Thus variable and subject control is important. This control can be accomplished by employing carefully matched control groups or factoring out variables during multiple regression. The retroactive nature of most

of the studies on combat stress reduces the ability to determine a time sequence. This sequence problem can be overcome by longitudinal studies where both stress and non-stress situations are evaluated. Researchers need to acknowledge their inability to predict or identify temporal sequence due to the cause/effect problem.

Hobfall (1985) stated that the use of correlational data has led to a "simple model that needs to be expanded with future research." Low correlations are often assumed to signify little or no relation between the variables. However, moderator variables may make this assumption inaccurate. A high correlation for one subgroup combined for a low correlation with another subgroup could lead to an overall low correlation and mistaken conclusions. Hobfall (1985) thus emphasized the need for more extensive analysis beyond the use of correlational findings.

A Few Exceptions

Despite the many criticisms and methodological shortcomings, there are some studies worthy of note. Yager, Laufer, and Gallops (1984) used a large sample (n=1342) composed of both veterans and nonveterans. By comparing these groups, the authors were able to report an existing relationship between exposure to combat and psychological problems. Vietnam veterans who had not seen combat had

fewer behavioral and emotional difficulties than did those veterans who had been exposed to combat. Arrests and convictions after military service increased as exposure to combat in military service increased. The larger sample size allows for more accurate generalizing from this study to other veterans.

Solomon, Mikulincer, and Hobfall (1986) used a sample size of 382 and a control group of 334. The use of a large sample and a large control group enabled them to conduct an extensive study of social support, loneliness, and combat intensity in relation to CSR. They concluded that loneliness is the best single predictor of combat stress reactions (CSR). Lack of officer support is a predictor of loneliness, and the intensity of battle is also a predictor of CSR. Nice, McDonald, and McMillan (1981) conducted their study with 138 repatriated prisoners of war (RPWs) from Vietnam. They also had a comparison group of military who had never been prisoners. Nice et al. (1981) compared the RPWs with the controls in order to find the key predictors of divorce and the differences between the groups. The stress of being a POW (and then a RPW), along with the length of marriage, number of children and length of captivity, led to higher divorce rates among the RPWs than among the controls. Their task could not have been accomplished validly without the control group.

Laufer, Brett, and Gallops (1985) used a large sample and were able to control for several variables thought to influence the onset of PTSD. The authors controlled for a variety of factors which included social background, service characteristics, and sociopathology and psychopathology after service. High correlations were found between PTSD and demoralization, guilt, and alcohol and drug use. Further analysis was performed using a regression model in which the highly correlated variables were controlled. This analysis enabled them to determine the statistical significance of combat stress effects while controlling for the other factors. The in-depth analyses of the Laufer, et al. study (1985) are based on an extremely well designed research project.

To avoid dealing with only a sample of drug users, Helzer (1984) included a "general" group in his study as well. All of Helzer's subjects were enlisted veterans from Vietnam. A group of 470 random ("general") subjects was compared with a group of 495 "drug positive" subjects. Helzer was critical of the retrospective nature of past research. He also recognized that "few attempt to compare the influence of predisposition to that of wartime stress on later emotional disability". To this end, Helzer used a matched control group of nonveterans. This study has thus avoided the problems with number of subjects,

generalizability, and controls that are common elsewhere. Helzer's recognition of research problems has served to make his study more valid and generalizable.

Gal (1983) reviewed 300 heroism cases among Israeli soldiers in the Yom Kippur War. He related factors leading to heroic acts to social relationships within the primary group, including morale, cohesiveness and responsibility. Gal's sample consisted of 283 subjects and a control group. The use of a control group clearly differentiated his study from many others reviewed in this paper which do not use controls. Another example of a study with a relatively large sample and control group is one by Branchey, Davis, and Lieber (1984). These authors studied 51 subjects who had not experienced combat and 52 subjects who had combat experience. They were able to determine that a relationship exists between combat exposure and alcoholism based on the comparison of the two groups.

Conclusion

In the review of forty-nine research studies on stress reactions, several areas of methodological weakness were identified. Of these forty-nine articles, only seven were judged to be methodologically and statistically sound pieces of research. Twenty percent of the studies did not report the sample size; 14% were case studies of one to ten

subjects; 22% had eleven to fifty subjects. Reflecting this bias towards small case studies, an appalling thirty-nine research studies had no control group. Although seven of the twelve Israeli studies reported no sample size, as a general rule, Israelis rarely report sample sizes because of security reasons. Therefore, those seven Israeli studies may have some validity as well.

While each study has some value and some exceptional studies are mentioned above, problem areas exist throughout these studies. Problems with discrepant findings, small sample sizes, lack of comparison groups and difficulty of establishing cause/effect relationships have been discussed in the hope of decreasing their occurrence in future research. Specifically, researchers are called to use better controls, larger and more representative samples, more extensive analysis of data and more explicit definitions of variables. Research findings to date in the area of stress reactions are prevalent, yet not well supported. Replication of these studies, using the suggestions above to ensure more accurate results, is needed for the verification of their results.

Table 1: Sample Sizes in 49 Experimental Studies^a

Sample Size	Number of Studies	Control Group Size	Number of Studies
$n \leq 10$	7	$n \leq 10$	0
$n = 11$ to 50	11	$n = 11$ to 50	1
$n = 51$ to 100	6	$n = 51$ to 100	2
$n = 101$ to 500	10	$n = 101$ to 500	2
$n > 500$	5	$n > 500$	0
$n = \text{unknown}$	10	$n = \text{unknown}$	5
		no control group	39

^aThese numbers reflect only those studies in which subjects were used. Review and summary articles are not included.

Figure 2: Sample Numbers

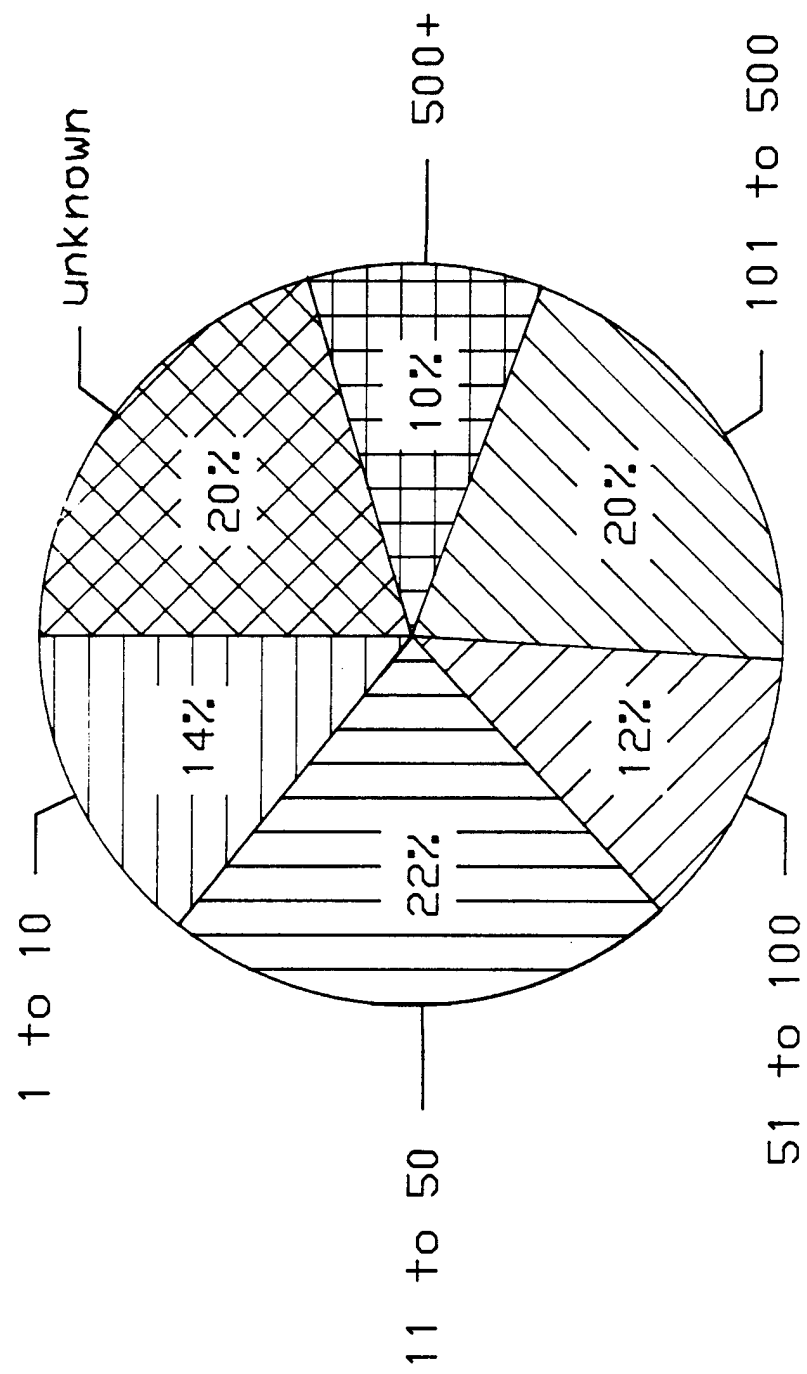


Figure 3: Control Numbers

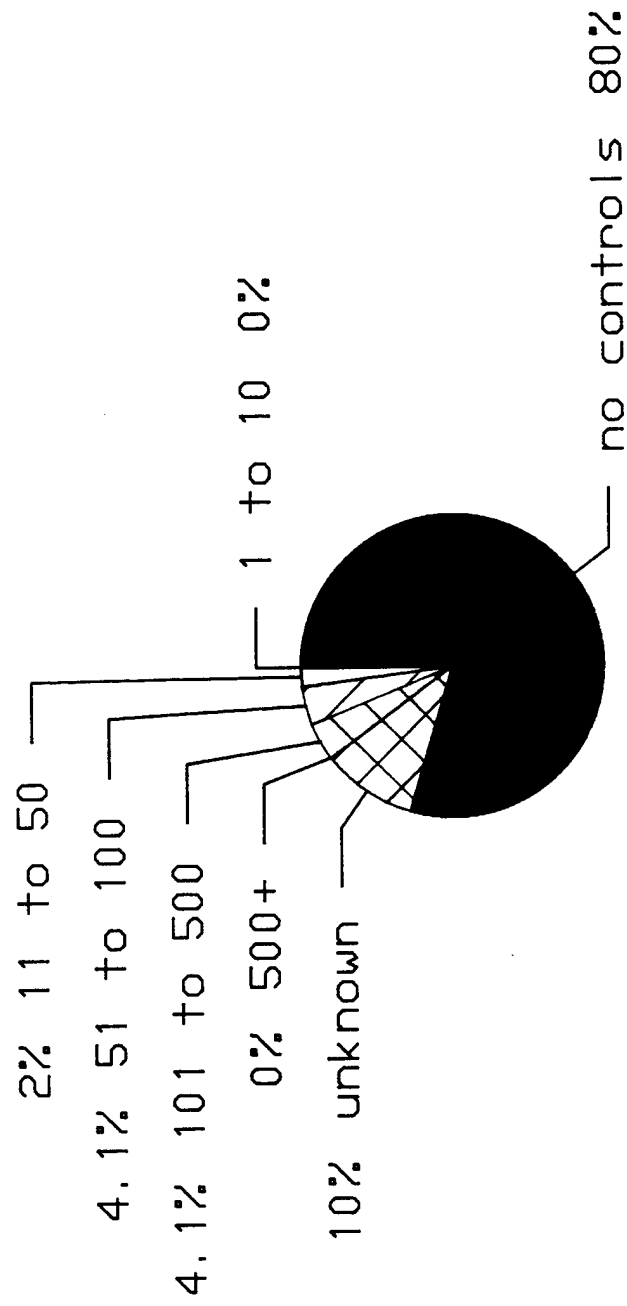
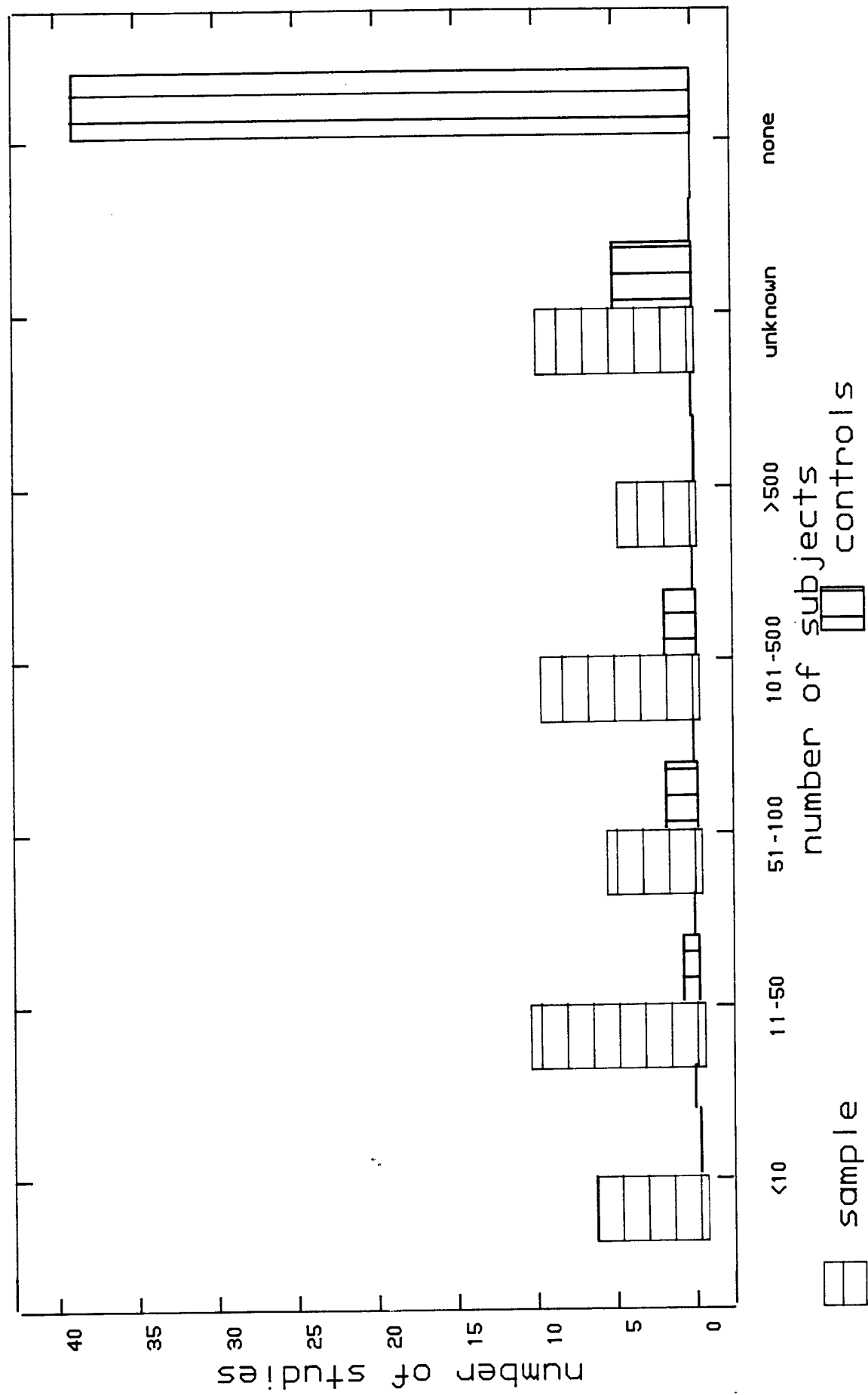


Figure 4: Comparison of Subjects and Controls



Appendix A

AUTHOR	SAMPLE	CONTROL	FINDINGS	COMMENTS
Andrews, Tennant, Hewson, Valliant 1978	n=863	none	-relationship between adverse life events and symptoms -risk of psychological impairment varied with life event stress, coping style, and crisis support	-civilian sample (Australian) -large sample size
Behar 1984	n=31	none	-85% of impatients with PTSD also had other psychiatric disorders -alcoholics all had flashbacks -alcoholism, caffeineism, drug use, depression, sociopathy	-small sample -sample population consists of patients only
Bey 1972	1CS	-----	-stress of impending separation from family -estrangement from being newcomer to a clique -rotation schedule rotates only one at a time	-no subjects -uses only 1 case example

AUTHOR	SAMPLE	CONTROL	FINDINGS	COMMENTS
Bey, Zecchinelli 1974	n=43	none	<ul style="list-style-type: none"> -adolescents and young adults -state of hyper-alertness -hostile, deprived environment -helplessness when fired upon -history of impulsive act and poor attitudes -use of alcohol and drugs -separation from home and family -unable to meet demands -physical and social closeness -no available means of escape -readily available weapons, with pressure to act -violence held escape value 	<ul style="list-style-type: none"> -no controls -small sample -sample population consists of psychiatric patients only
Blanchard, Gerardi, Kolb, Barlow 1986	n=43	none	<ul style="list-style-type: none"> -used to ADIS to diagnose PTSD and found good reliability 	<ul style="list-style-type: none"> -diagnosis only -small sample

AUTHOR	SAMPLE	CONTROL	FINDINGS	COMMENTS
Bleich, Siegel, Garb, Lerer 1986	n=25	none	<ul style="list-style-type: none"> -PTSD symptoms involve re-experiencing the traumatic event, numbing of responsiveness -antidepressants had the best results -there was a positive interaction between drug treatment and psychotherapy 	<ul style="list-style-type: none"> -small sample -drug therapy with several drugs
Boman 1986	n=50, 25	none	<ul style="list-style-type: none"> -PTSD can occur in those without combat exposure and without overseas military service -conflicting reports say Vietnam veterans have high levels of psychiatric symptomatology -PTSD may not be linked specifically to combat exposure 	<ul style="list-style-type: none"> -no controls -comparing two unlike samples

AUTHOR	SAMPLE	CONTROL	FINDINGS	COMMENTS
Bourne 1972	n=?	none	<ul style="list-style-type: none"> -the one year rotation creates better adaptation but breakdown of the small unit -reentry shock during the reception back home -war was uniquely unpopular -self-concept plays an important role in adaptation 	<ul style="list-style-type: none"> -no reported sample size -no controls
Bourne, Coli, Datel 1968	n=10	-----	<ul style="list-style-type: none"> -while under the stress of being attacked, more hostility was present than anxiety or depression -this hostility was directed at higher headquarters, indigent Vietnamese and fellow team members, not at the enemy 	<ul style="list-style-type: none"> -ten special forces soldiers in South Vietnam -gave them the Weekly Multiple Affect Adjective Check list for four weeks -small sample -no controls

AUTHOR	SAMPLE	CONTROL	FINDINGS	COMMENTS
Bourne, DuySan 1967	n=757, 324	none	<ul style="list-style-type: none"> -one-year rotation may not be a factor because the Arvn also had cases without the rotation -nature of the war itself may be the most important factor in stress -major cultural differences between the two groups -both groups had low NP casualties -combat stress may be a negligible consequence in terms of morbidity in Vietnam -casualties came from both support and combat units 	<ul style="list-style-type: none"> -large sample sizes -comparing two culturally differing groups with possible different diagnostic criterion -sample population consists of psychiatric patients only
Branchey, Davis, Lieber 1984	n=52	n=51	<ul style="list-style-type: none"> -incidence of heavy drinking is related to severity of combat and length of combat exposure 	<ul style="list-style-type: none"> -correlational -has controls

AUTHOR	SAMPLE	CONTROL	FINDINGS	COMMENTS
Cavenar, Nash 1976	6CS	-----	<ul style="list-style-type: none"> -anyone can develop PTSD -pre-existing personality traits are not causal 	<ul style="list-style-type: none"> -no sample -small number of case studies
Chaney, Williams, Cohn, Vincent 1984	n=78	none	<ul style="list-style-type: none"> -MMPI profiles of PTSD patients resemble those of organic disease cause by pathology more than those of psychogenic disorders -MMPI can be used to differentiate between PTSD and other disorders 	<ul style="list-style-type: none"> -all subjects had had injury -no controls -small groups for comparison
Dasberg 1975	N=?(I)	none	<ul style="list-style-type: none"> -loneliness, guilt, abandonment, grief, isolation are factors leading to mental breakdown during war -need immediate treatment -early childhood experiences and disturbed relation-ships with key figures -isolating positions in the military -must develop the sense of belonging to the group -loneliness leads to anxiety 	<ul style="list-style-type: none"> -describes the factors necessary to promote group belonging -Israeli army only

AUTHOR	SAMPLE	CONTROL	FINDINGS	COMMENTS
Davidson, Schwartz Storck, Krishnan, Hammett 1985	n=36	yes	<ul style="list-style-type: none"> -alcohol abuse and depression were the most common diagnoses -PTSD is a form of pathological anxiety -66% had history of familial psycho-pathology -there was an increase in the prevalence of alcoholic siblings -all patients had had at least one significant psychiatric illness during their lifetime 	<ul style="list-style-type: none"> -not a random sample -used both inpatients and outpatients -controls are unmatched
Dewane 1984	n=?	none	<ul style="list-style-type: none"> -based on ten years experience with Vietnam veterans -inherent contradiction for medical personnel -helplessness -survivor guilt -preoccupation with death -anger, isolation and estrangement -may be a premorbid personality factor -grief work is effective with them in treatment 	<ul style="list-style-type: none"> -no controls -mostly medical personnel -mostly speculative and treatment oriented

AUTHOR	SAMPLE	CONTROL	FINDINGS	COMMENTS
Figley 1978	n=101	none	<ul style="list-style-type: none"> -combatants had lower personal adjustment than did noncombatants after their military entry -stresses interpersonal adjustment 	<ul style="list-style-type: none"> -no control -Vietnam veterans now in college -combatants versus non-combatants
Gal 1983	n=283	yes	<ul style="list-style-type: none"> -the dominant motivating factors for acts of courage are found in the social structure of the primary group -morale, cohesiveness, mutual responsibility -it may be cognitive or situational -heroes had higher general quality, motivation scores, and intellectual ability 	<ul style="list-style-type: none"> -cases of unusual heroism -does use controls

AUTHOR	SAMPLE	CONTROL	FINDINGS	COMMENTS
Gal 1986	n=?	none	<ul style="list-style-type: none"> -uses factor analysis and intercorrelations to find 8 factors leading to stress -confidence in commanders -confidence in self, team, and weapons -unit cohesion and morale -familiarity with mission and terrain -confidence in immediate commanders -enemy evaluation -legitimacy of the war -worries and concerns -morale played big role in onset and extent of psychiatric reactions during combat -morale and cohesion merged to form one factor -morale is not predicted, but is instead one of factors that combines to comprise the overall climate 	<ul style="list-style-type: none"> -not just correlational -done with Israeli defense forces

AUTHOR	SAMPLE	CONTROL	FINDINGS	COMMENTS
Glover 1984	n=?	none	<ul style="list-style-type: none"> -symptoms include ideas of omnipotence, biases as to the importance of their decisions -could not mourn due to the situation -not necessarily the premorbid personality that is related to stress 	<ul style="list-style-type: none"> -uses Vietnam veterans -no controls -no reported subjects
Glover 1984	2CS	none	<ul style="list-style-type: none"> -3 factors found in the mistrust in Vietnam veterans -the war experience -society's negative response -psychosocial development -those most affected were often conscientious and patriotic 	<ul style="list-style-type: none"> -case studies only -no controls

AUTHOR	SAMPLE	CONTROL	FINDINGS	COMMENTS
Helzer 1984	n=943	yes	<ul style="list-style-type: none"> -event focused studies do not account for the tendency to consult for illness -most studies are retrospective -by studying extreme events we can avoid these problems -difficult to distinguish antecedents from consequences when the events are under the individual's control -lack of specificity in definitions -there is a synergistic effect rather than an attenuation of pre-disposition in extreme situations 	<ul style="list-style-type: none"> -could have found the amount of influence of combat but did not -definition of severe stress differs from others -uses a drug positive sample with a general sample (495 vs.470) -matched controls -large sample
Hendin 1984	n>100 (1CS)	none	<ul style="list-style-type: none"> -PTSD patients tend to identify with other veterans -they treat the outside world as the enemy -they become alive in a climate of combat -anger helps them overcome fear and deny guilt 	<ul style="list-style-type: none"> -has only one representative case study -no data or statistics -no controls

AUTHOR	SAMPLE	CONTROL	FINDINGS	COMMENTS
Hendin, Haas, Singer, Gold, Trigos, 1983	n=100	none	-Preexisting personality gives meaning to the combat experience -stresses character, and precombat personality -survival guilt	-large sample size
Hendin, Haas, Singer, Gold, Trigos, Ulman 1983	n=? 1CS	none	-discusses symptoms, pre- and post-combat life, nature and extent of combat	-no reported sample size -one case study is representative
Hendin, Pollinger- Haas, Singer, Houghton, Schwartz Wallen 1984	n>100 3CS	none	-predominant theme on the Rorschach test is combat, which is much more than for those who have PTSD without reliving experiences -psychic trauma under conditions of terror and fatigue -fatigue due to insomnia, drug and alcohol abuse, can trigger these reliving experiences -precombat variables do not distinguish those with reliving experiences from those without	-only 3 case studies reported -no controls

AUTHOR	SAMPLE	CONTROL	FINDINGS	COMMENTS
Hendin, Pollinger, Singer, Ulman 1981	n=40 4CS	none	-stress reactions are related to individual perception of traumatic experience -meanings of combat are reflected in pre- and post-combat adjustment	-small sample -only four case studies
Hocking 1970	n=303	none	-incarceration in ghettos or concentration camps -hiding for a period of time -no one is immune, the predisposition is not the sole predicting factor	-large sample size -sample consists of WWII veterans
Jelinek, Williams 1984	n>2000	-----	-depression, helplessness rage, anxiety, isolation survivor guilt, alcohol consumption are all symptoms of PTSD	-based on the experiences of the authors and patients -large sample but all were from a psychiatric population

AUTHOR	SAMPLE	CONTROL	FINDINGS	COMMENTS
Keane, Scott, Chavoya, Lamparski, Fairbank 1985	n=45	yes	-Vietnam veterans with PTSD had significant reductions in social network size and quality of social support -led to social alienation, depression, guilt, and traumatic anxiety -PTSD veterans had more combat exposure	-controlled for combat and demographic variables -small sample size to do comparisons
Kleiger 1984	3CS	none	-all 3 subjects had impressive military records -there is little published about the prevalence of PTSD in the military community (most studies are on veterans) -active duty veterans may have coped better collectively because they remained connected to the military, this could reduce dissonance and provide support	-the three case studies are representative -one of few studies that deals with currently serving PTSD sufferers

AUTHOR	SAMPLE	CONTROL	FINDINGS	COMMENTS
Laufer, Brett, Gallops 1985	n=251	none	<ul style="list-style-type: none"> -the DSM-III criteria may hinder the identification of different varieties of PTSD and thus underestimate its prevalence -PTSD measures were highly correlated with demoralization, guilt, alcohol and marijuan use -controlled for these variable in a regression equation to determine the effects 	<ul style="list-style-type: none"> -controlled for social background, service characteristics, and psychopathology after service -used correlations but also did regression -sample had 183 whites and 68 blacks
Levac, Greenfeld, Baruch 1979	n=?	-----	<ul style="list-style-type: none"> -Military assignment, fighting, logistics, rank, intensity of fire, age of the soldier, all lead to stress vulnerability -those adapting through activity have a decreased psychiatric risk -there is a critical period up to one week of treatment that will determine the outcome of treatment 	<ul style="list-style-type: none"> -investigated combat reaction in Israeli troops in the Yom Kippur war Of 1973 -no reported sample size for security reasons

AUTHOR	SAMPLE	CONTROL	FINDINGS	COMMENTS
Levy, Neumann 1984	n=?	-----	<ul style="list-style-type: none"> -introduced several lines of treatment to adhere to the principles of proximity, immediacy and expectancy in the treatment of combat reactions -goals of treatment were to return the individual to his military role in the original unit, to keep within the army, and to at the very least return them to optimal health and functioning -faster and more substantial recovery occurred 	<ul style="list-style-type: none"> -no reported sample size for security reasons -installation occurred in the 1982 war
Lund, Foy, Sipprelle, Strachan 1984	n=43	-----	<ul style="list-style-type: none"> -measure trauma in the Vietnam war -combat activity, involvement in atrocities, and being stationed in a combat zone -relates combat exposure, and adjustment before and during the military to PTSD and the severity of symptoms -stress may build cumulatively through exposure to trauma 	<ul style="list-style-type: none"> -no controls -small sample -all PTSD patients

AUTHOR	SAMPLE	CONTROL	FINDINGS	COMMENTS
McCubbin, Hunter, Dahl 1975	n=215 families	-----	-major adjustments occurred in family roles and interaction when husbands or fathers were POWs	-army, navy and marine corps families one year after reunion
Nice, McDonald, McMillian 1981	n=138	n=138	-marital stability and perceptions of marital adjustment, divorce rate -length of marriage, wife's retrospective view of marriage quality, wife's emotional adjustment will predict family reintegration	-large sample size -has control group -deals only with POWs

AUTHOR	SAMPLE	CONTROL	FINDINGS	COMMENTS
Noy, Nardi, Solomon 1986	n=?	none	<ul style="list-style-type: none"> -the magnitude of the combat stress is the major etiological factor in psychiatric casualties -group cohesiveness and leadership are buffers -the conduct and outcome of the battle are important--defeat will lead to an increase in psychiatric casualties -intensity and duration of battle -we should be able to predict the potential susceptibility of a battalion from the unit characteristics, cohesiveness and leadership and the anticipated battle conditions 	<ul style="list-style-type: none"> -no sample size for security reasons -used 4 battalions
Rosenthal 1975	n=151	-----	<ul style="list-style-type: none"> -soldiers in Vietnam had to fight in an indecisive war -soldiers were dependent on authority but the authority figures were unable to assert their power -no significant difference on anomy between Vietnam soldiers and the non-veteran sample 	<ul style="list-style-type: none"> -Vietnam war soldiers and non-veterans -the scale used does not assess long term effects

AUTHOR	SAMPLE	CONTROL	FINDINGS	COMMENTS
Saigh 1984	n=20,35	-----	<p>-anxiety levels reported by those still in Beirut corresponded to those reported by the evacuated soldiers</p> <p>-arousal levels decreased markedly at the post-assessment</p> <p>-suggests that prolonged exposure to stressful events that are then alleviated may not be associated with high stress levels in the long term</p>	<p>-exclusively based on self report</p> <p>-many factors may have been involved with the validity</p> <p>-there is no data on physiology or overt behavior</p> <p>-Lebanese graduates just before the invasion of Lebanon by Israel in 1982</p> <p>-group of 20 remained in Beirut while the group of 35 were evacuated</p>

AUTHOR	SAMPLE	CONTROL	FINDINGS	COMMENTS
Shaw 1983	1CS	-----	<p>-intensity of combat, length of rest periods, tactical situation, communication, weather, terrain, cohesiveness, physical exertion, sleep, food supply, other supplies and battle stress are factors leading to the onset of combat exhaustion</p> <p>-there is a diminishing chance of survival with the length of combat exposure</p> <p>-morale, cohesion and leadership, along with individual factors such as age, ability and education are also factors</p>	<p>-no specified sample size</p> <p>-gives an extensive review of the many factors thought to be influential in the onset of combat exhaustion</p>

AUTHOR	SAMPLE	CONTROL	FINDINGS	COMMENTS
Solomon, Mikulincer, Hobfall 1986	n=382	n=334	<ul style="list-style-type: none"> -Military company support, perception of battle intensity, and feelings of loneliness are important to breakdown during combat -social support does not buffer the effects of stress but does affect it directly -officer is a predictor of loneliness -battle intensity is a predictor of combat stress reaction -loneliness is the best single indicator of CSR 	<ul style="list-style-type: none"> -has a control group -tested various predictors -done on soldiers from the Israeli-Lebanon war in 1982
Solomon, Oppenheimer, Noy 1986	n=?	-----	<ul style="list-style-type: none"> -there are two opinions on stress: stress evaporation versus cumulative residual stress -many patients had early difficulties in interpersonal relations or a pathological nuclear family -school problems, problems with married and family life, and disciplinary problems in the military 	<ul style="list-style-type: none"> -study of Lebanon war veterans without PTSD and a group in CFRU -a nine-year follow-up study

AUTHOR	SAMPLE	CONTROL	FINDINGS	COMMENTS
Steiner, Neumann 1978	n=74	n=100	<p>-soldiers in the control group experienced more hardships than the others which led these authors to conclude that combat exposure does not influence stress reactions</p> <p>-psychological factors are much more important (loneliness, trust of immediate command, low performance esteem, low unit morale, not serving with original unit and moving or changing teams repeatedly)</p> <p>-the control group had better trust in their commanders, self-confidence, high morale, and were fighting in their original units with most of the same people from previous wars</p>	<p>-large sample size with control group</p> <p>-compares two very different types of groups with known differences in their reaction to stress and other incongruities</p>

AUTHOR	SAMPLE	CONTROL	FINDINGS	COMMENTS
Sudak, Martin, Corradi, Gold 1984	n=10	-----	<p>-pre-military personality factors included significant maternal deprivation of loss, parental neglect or abuse, low self-esteem, poor impulse control, and a history of delinquent behavior</p> <p>-PTSD could be due to a failure to cope with revived conflicts</p> <p>-premorbid sequence: severely disturbed childhood, ego impairment, adult character structures that utilize relatively immature defenses</p>	<p>-sample of only ten, all of whom were inpatients in Cleveland between 1979 and 1981</p> <p>-uses case reports</p> <p>-no controls</p>
Thienes-Hontos, Watson, Kucala 1982	n=29, 29	-----	<p>-factors found to be influential include the unpredictability of danger in guerilla warfare, the skepticism of the value of the war effort, having to kill women and children and civilians, the rotation of soldiers singly, return to the US suddenly with a limited job market and feelings of being scapegoated</p> <p>-stress reaction are not peculiar to or more common among Vietnam veterans</p>	<p>-compares a group of combat veterans from Vietnam with a group of combat veterans from the Korean war</p> <p>-all subjects had psychiatric problems</p>

AUTHOR	SAMPLE	CONTROL	FINDINGS	COMMENTS
Toubiana, Milgram, Noy 1986	n=15	yes	<ul style="list-style-type: none"> -all patients in a forward army field hospital were treated and referred back to their units within 36-72 hours -there was only a slightly higher incidence of disability with consequent inability to serve as a result of combat exposure as compared with those with no combat exposure 	<ul style="list-style-type: none"> -has a control group -small sample -illustrative case studies
Yager 1975	n=31	none	<ul style="list-style-type: none"> -focuses on the least anonymous form of violence, close range combat -interviewed veterans for family background, violence in childhood, arrests, schooling, status and military history -precombat variables as a group can help to distinguish between violence and non-violence groups, but they cannot predict -esprit, nature of the combat unit, soldiers' histories may be factors but we still do not have the understanding to be able to predict or prevent 	<ul style="list-style-type: none"> -no controls -done with Vietnam veterans with incidence of personal violence during combat -assumes random combat assignment

AUTHOR	SAMPLE	CONTROL	FINDINGS	COMMENTS
Yager, Laufer, Gallops 1984	n=1342	yes	<p>-Vietnam veterans who did not have combat exposure had fewer problems than other veterans who had not been in Vietnam</p> <p>-arrest and convictions increased as combat exposure increased</p> <p>-participation in abusive violence had an emotional impact on blacks that it did not have on whites</p>	<p>-subjects consisted of 629 nonveterans and 713 veterans, 350 of which were Vietnam veterans</p> <p>-all Americans</p> <p>-large sample size</p>

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LEADERSHIP AND MANAGEMENT TECHNICAL AREA

Working Paper

88-05

FACTORS RELATING TO MILITARY COHESION: A Research Note

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In order to confirm that items taken from a survey of literature on military cohesion were salient concerns to U.S. Army officers and appropriate items to use as a methodological framework for our analysis of the South Atlantic War of 1982 a short survey was administered to a random sample of 100 U.S. Army officers at the Army War College in Carlisle, Pennsylvania in September 1987.

The questionnaire consisted of 25 items taken from the survey of literature on military cohesion (Stewart, 1987, unpublished). The respondents rated the variables on how important they considered each item's contribution to combat effectiveness. The scale was a seven-point scale (0 to 6) ranging from "not at all important" to "extremely important". Ninety of the 100 respondents returned the sample.

Ninety-five percent of the respondents were Lieutenant Colonels and 5% were Colonels. Ninety-four percent indicated that they had served in a combat zone and only 6% had not.

The results of the survey are found in Table 1.

Table 1 About Here

With only two exceptions, all the items are at the mid-point of the scale (3.0) or above. Sense of mission (5.6), technical and tactical proficiency (5.3), teamwork (5.2), leader's concern for men (5.5), leader example (5.4), trust and respect for leaders (5.3), command, control and intelligence (5.0) and logistics and supply (5.0) received the highest rankings.

The lowest ranking of 2.3 for religious belief is consonant with Stouffer et al (1949) who found that the average soldier or officer was hard pressed to articulate his religious faith. Yet, that religious faith was a comfort to men in foxholes during direct and indirect fire. The Stouffer (1949) research is further confirmation of the commonsense adage "no atheists in foxholes".

The second lowest ranking of 2.7 for the item "appropriate level of social distance" is in keeping with the egalitarian aspect of the United States Army. U.S. society, as a whole, is not predicated on status rankings. Since the United States has an open and upwardly social mobile ethos, it is quite understandable that Army officers would rank social distance on a low priority for combat effectiveness and cohesion. Little's

(1964) research on U.S. soldiers in the Korean war shows that social distance is rarely maintained in combat situations. Rank distinctions blur in the face of danger. Also, since it is extremely difficult to determine the term "appropriate", we deleted this variable from our analytical framework.

What is most interesting is the mid-point ratings of the cluster of items relating to organizational bonding. With the exception of loyalty to the nation (4.0) and patriotism (3.7) the other items hover around the mid-point of our scale.

Once again we see a re-affirmation of the Stouffer et al (1949) research that the average American soldier in World War II rarely spoke of loyalty or patriotism as reasons for fighting the war. However, when asked more questions about their basic reasons for fighting a war, these same combatants in the Central European and Pacific theaters were able to voice their innermost feelings about defending democracy. The AWC sample's mid-point ratings only indicate that, like Stouffer's World War II sample, these officers at the U.S. War College simply accept the concept of organizational bonding as an intrinsic part of their psychology and concentrate more on specific items relating to combat effectiveness.

The sample was given an opportunity to write any additional comments regarding the issue of combat effectiveness and cohesion. Some of these comments follow:

I would add public support--the nation fully behind whatever action the Armed Forces is engaged in.

... the cohesion established by stability, common training, trust, confidence and knowledge of other members of the unit as gained only in units who have been together for extended periods. One of the most important factors!

I believe that another factor is extremely important--I call "it"--but what "it" amounts to is a shared conception that the unit is the best, that it will win--"as it always has". Frequently, all of this is myth but that's irrelevant. The point is that everyone believes in the unit's winning destiny. This is more than high morale, more than a positive leadership climate, it is sort of egotism at the unit level. High performing units frequently sustain "it"--Rommel's Afrika Corps..our Ranger Battalions, a couple of battalions in my old division and so on.

The unit must have a strong sense of internal

cohesion/trust at all levels. How they feel is much more important than their technical competency. Leaders must understand and support why soldiers fight rather than how to fight.

Other comments included items such as: camaraderie, high standards, integrity of leader, pride in unit, fear of dying, fear of failure, respect for dissent, sense of belonging, sense of cohesion and trust at all levels, total commitment of the people and the government, a will to win and winning spirit.

Thus we see from the written comments and ratings given by this sample of U.S. Army officers that these variables are important in analyzing the concept of cohesion and its relation to combat effectiveness. Table 2 shows the rank order of these variables.

Table 2 About Here

Even more important and more heartening is the fact that these officers, some of whom are future generals of the U.S. Army, show such a sensitivity and awareness of the need for men to be integrated into units with high morale and the will to win.

**Table 1: Results of Army War College Survey on
Variables Effecting High Combat Effectiveness
(n=90 U.S. Army Officers)**

Category	Mean
1. <u>Peer Bonding</u>	
a) sense of mission	5.6
b) technical and tactical proficiency	5.3
c) lack of personnel turbulence	4.0
d) teamwork	5.2
e) trust, respect, and friendship	4.8
2. <u>Organizational Bonding</u>	
a) loyalty to the nation and its values	4.0
b) patriotism	3.7
c) military tradition and history	3.0
d) strong religious belief	2.4
e) concept of valor or heroism	3.1
3. <u>Vertical Bonding</u>	
a) open organizational climate	3.9
b) leader's concern for the men	5.5
c) leader example	5.4
d) trust and respect for leaders	5.3
e) sharing of discomfort	4.4
f) shared training	4.3
g) appropriate level of social distance	2.7
4. <u>Structural/Societal Factors</u>	
a) culture, norms, values and organization of the military	3.6
b) defense budget	3.2
c) training	5.4
d) doctrine	3.8
e) tactics	4.7
f) command, control, communications, and intelligence	5.0
g) logistics and supply	5.0
h) medical care and facilities	4.6

Table 2: Rank Ordering of Major Factors Impacting on
Combat Effectiveness

<u>Category</u>	<u>Mean</u>
1) Sense of Mission	5.6
2) Leader's Concern for the men	5.5
3) Leader example	5.4
4) Training	5.4
5) Technical and tactical proficiency	5.3
6) Trust and respect for leaders	5.3
7) Teamwork	5.2
8) Command, control, communications, and intelligence	5.0
9) Logistics and supply	5.0

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LEADERSHIP AND MANAGEMENT TECHNICAL AREA

Working Paper

87-09

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HOME-STATION DETERMINANTS OF THE PLATOON LEADER-PLATOON
SERGEANT RELATIONSHIP IN A TACTICAL ENVIRONMENT:
FOCUSED ROTATION AT THE NATIONAL TRAINING
CENTER (NTC)

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8780

HOME-STATION DETERMINANTS OF THE PLATOON LEADER-PLATOON SERGEANT
RELATIONSHIP IN A TACTICAL ENVIRONMENT: Focused Rotation at the
National Training Center (NTC)

EXECUTIVE SUMMARY

Requirement:

To provide information for the development of lessons learned on leadership during a special focused rotation at the National Training Center (NTC) by: Identifying home-station conditions in the areas of training, organizational factors, leadership, and individual soldier characteristics that are important to (1) the platoon leader-platoon sergeant relationship and (2) the unit performance effectiveness of platoons in tactical exercises at the NTC.

Procedure:

Three weeks prior to a rotation at the NTC, members of 27 platoons (from squad/crew members to platoon leaders) and their company-level leaders (first sergeants and company commanders), in the two participating battalion task forces, responded to questionnaires to measure factors that affect NTC performance. Factors were investigated in the areas of training, organizational factors, leadership, and individual soldier characteristics. Subject matter experts (SMEs) then rode with the observer/controllers (OCs) of platoons during the NTC rotation and, based on their observations of NTC tactical missions, rated the leadership performance of platoon leaders and platoon sergeants. For this special focused rotation, OCs also rated the effectiveness of platoon leaders, platoon sergeants, and the maneuver platoons with respect to mission accomplishment. Three weeks after the rotation, members of the platoons observed at the NTC responded again to questionnaires to permit assessment of pre-post rotation changes.

Findings:

Prior to the rotation, leaders from platoon sergeant on up felt positive about their units in terms of leadership, soldier quality, command climate, and morale. Squad/team members and squad leaders tended to give more equivocal (less positive) ratings (except perhaps for ratings of leadership). There were also possible indications of pre-rotation problems in the areas of: command climate (especially, situational harassments from workloads/working hours and concerns with the promotion system), training, and individual factors (morale of SMS and personnel turbulence).

Correlations between pre-rotation variables and NTC unit and leader performance pointed to the importance of the home-station leadership of the platoon sergeant as a promoter of effectiveness at the NTC. Generally, platoons with more highly rated platoon sergeants at the home station received higher ratings of leader and unit performance at the NTC. Results on assignment conditions--time in service, length of tenure in the unit, and opinions about unit promotion policy-- further highlighted the importance of the platoon sergeant. Finally, small unit bonding--leaders' regard for their squad/team members and horizontal bonding among the squad/team members--was found to be significantly related to NTC performance.

The few significant pre-post differences indicated that after the NTC rotation, there was relatively (1) decreased confidence in about one-third of the platoon sergeants, (2) increased bonding between squad/crew members and their immediate squad-level leaders, and (3) less optimism about success at the NTC (training factor).

Based on these findings, home-station determinants appear to consist of some interaction between variables in such areas as leadership, organizational conditions, training, and individual soldier characteristics. Two likely sets of home-station determinants consist of:

(1) The platoon sergeant--both the quality of the platoon sergeant's home-station leadership and personnel assignment conditions providing opportunities for quality leader performance by the platoon sergeant; and

(2) Bonding or cohesion--the development of mutual respect between and among the squad/team members and leaders prior to the NTC experience.

Utilization:

These findings have been supplied to the Combined Arms Training Activity, NTC Lessons Learned, as a basis for derivation of leadership lessons learned and requirements to support the derived lessons.

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BACKGROUND

This report presents data from a special rotation at the National Training Center (NTC) that focused on development of lessons learned on leadership at the platoon level. The focus of the rotation was originally designated as NCO leadership. The Commander, Combined Arms Training Activity (CATA), further specified Platoon Sergeant (PSG) leadership and the Platoon Sergeant-Platoon Leader relationship as the issues for examination. The mission agreed upon by the leadership proponents, the U. S. Army Sergeants Major Academy (USASMA) and the Center for Army leadership (CAL); the agency performing the research, the U.S. Army Research Institute for the Behavioral and Social Sciences (ARI); and CATA was as follows: Conduct a special focused rotation that focuses on PSG leadership, particularly the PSG's interface with the platoon leader.

From this mission statement, three research questions were developed. A previous report (Rachford, Twohig, & Zimmerman, 1986) presented findings on the two questions concerning identification of (1) the essential elements of the PL-PSG relationship and (2) the impact of the PL-PSG relationship on unit performance at the NTC. That report indicated a lack of doctrine on the desired nature and development of the PL-PSG relationship. Data collected by observing PL-PSG leadership and unit performance during the rotation generally indicated that behaviors of PLs were more directly related to platoon performance but that PSG leadership activities and the PL-PSG relationship were also important to unit performance. More specifically, it was reported that:

1. Ratings of PL and PSG leadership performance were positively related to ratings of unit (platoon) effectiveness or mission accomplishment.

2. Platoons with highly rated PLs tended to have highly rated PSGs, which may be an indication of the interdependence of their leadership.

3. The specific aspects of leadership performance and the PL-PSG relationship associated with platoon performance effectiveness were:

- * PL planning, teaching/counseling, and technical proficiency.
- * PSG teaching/counseling.
- * PSG/PL role clarity.
- * PSG respect for the PL and willingness to be led by the PL.

One might expect that leadership effectiveness and a good working relationship between the PL and PSG are formed at their home stations. This was the thrust of the third research question of the focused rotation: What factors at home-station (e.g., command climate, cohesion, training) impact on the PL-PSG relationship? The current report concentrates on this question about home station factors. The objectives of the report are to:

1. Describe the data collected at the units' home station (HS), before and after the rotation.
2. Identify the HS factors that were found to be related to leader and unit performance during the NTC exercises.

APPROACH

Overall Conceptual Framework

A general systems framework for research on the relationship between HS factors and NTC performance is presented in Figure 1. This framework was adopted as a guide for the present effort and as an initial systems perspective for ARI's longer-term research on HS determinants of unit combat effectiveness. For the present effort, this framework suggested both the variables for investigation and the overall research design.

In addition to HS leadership and leadership practices, this framework highlights three categories of variables as likely determinants of NTC performance: training, organizational factors such as command climate and cohesion, and characteristics of soldiers and leaders as individuals. For each of the four variable categories, Figure 1 also lists the specific HS variables discussed in this report.

Results of a HS-NTC analysis can identify HS factors that can be acted upon to improve unit performance. This possibility drove the research design. According to the design, HS conditions prior to the NTC rotation were to be described. These "pre" conditions were then related to performance during the rotation. HS conditions after the rotation were also described to identify "pre" vs. "post" differences.

HOME STATION

NTC

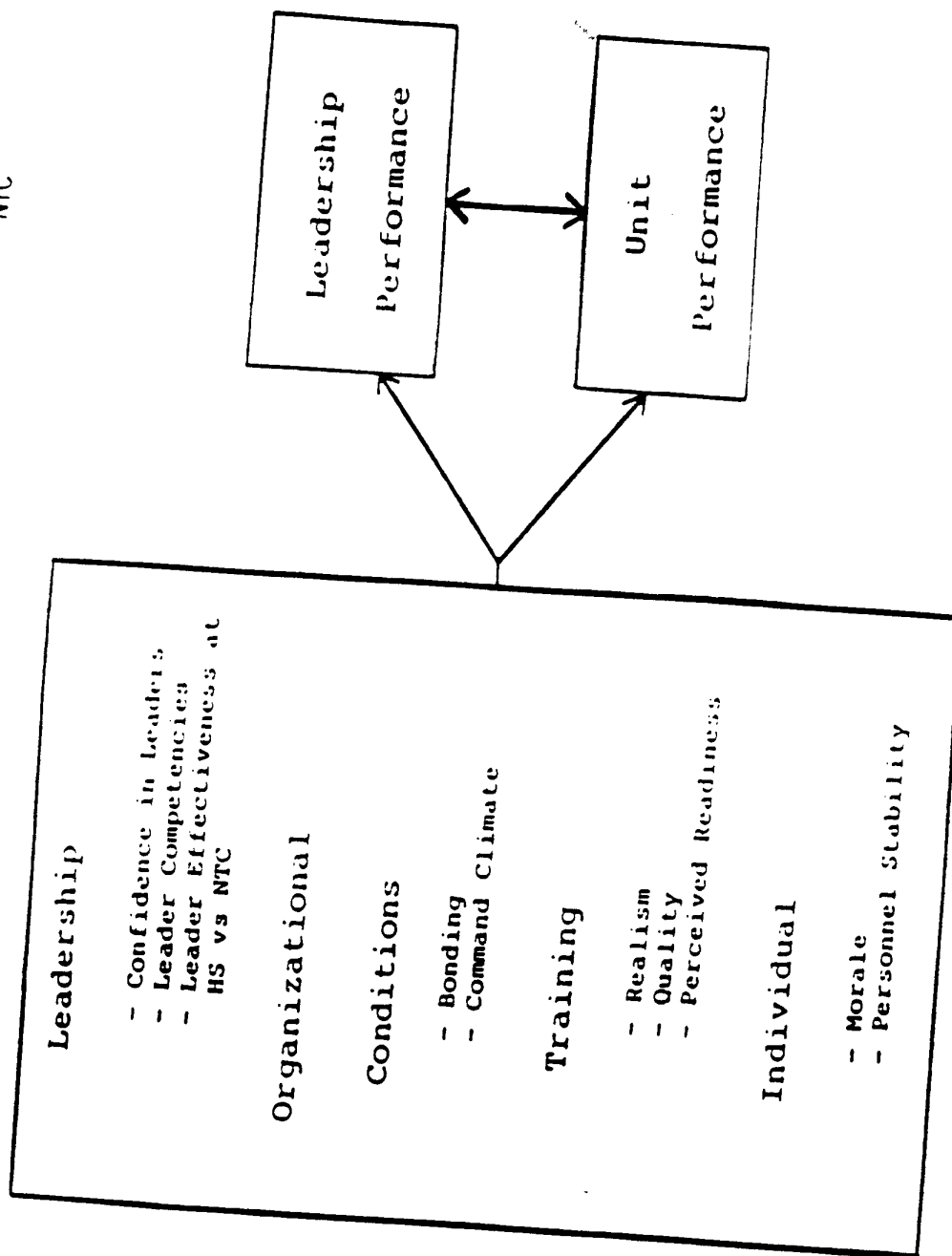


Figure 1. Systems Framework for Research on Home Station Factors and NTC Performance.

Methodology

Instrument Development

Unit members' responses to questionnaires were used to characterize the pre-rotation status of the unit in terms of the categories of variables shown on Figure 1. A separate questionnaire form was developed for each of these six types of unit members: (1) Company Commander (CO), (2) First Sergeant (FSG), (3) Platoon Leader (PL), (4) Platoon Sergeant (PSG), (5) Squad Leader/Tank Commander (SL stands for both), and (6) Squad Member (SM). Separate forms were required because the wording of some questionnaire items depended on the position of the respondent. Also, the number of questionnaire items--particularly those items eliciting ratings of HS leader competencies--was such that it was not practical for each type of unit member to respond to all items.

Some of the pre-rotation questionnaire items were drawn from prior research, e. g., the cohesion items. The specific goals of this effort also required development of some new items. Most of the new items were ratings of HS leader competencies. These items were constructed to fit with doctrinal concepts of leader competencies, e.g., planning, supervision. Items were also constructed to measure perceptions of HS training with two focuses: (1) training realism, based on comparisons to NTC conditions and situations; and (2) training quality, ratings of the training quality of individual training and of unit training from squad through battalion.

Multiple forms of the post-rotation questionnaire were also developed. Some of the post-rotation items duplicated pre-rotation items in order to measure effects of the NTC experience through examination of pre-post NTC changes. Other items focused on perceptions of the NTC experience.

The questionnaire items for the variables summarized in Figure 1 are presented in the annexes. Unit members used 5-point scales to rate or indicate their responses to most items. The verbal anchors for the scale values varied from item to item. For purposes of describing average ratings in this report, the following meanings have been associated to the scale values: 5 = very positive, 4 = positive, 3 = neutral, 2 = negative, and 1 = very negative. Note that items written so that a rating of 5 would have indicated a negative rating were reverse-scored prior to conducting statistical analyses. Thus, high values reported here are always positive with respect to the content of an item.

The development of instruments to measure leadership and platoon performance at the NTC is described in the prior report on this rotation (Rachford, et. al., 1986). Two sets of data obtained through these measures were used in this report on HS-NTC relationships. One set was derived from the subject matter

experts (SMEs) who had observed PLs and PSGs during the rotation and then rated their performance with respect to 10 leadership dimensions, e.g., planning and supervision. As in the earlier report, ratings across dimensions were combined (by summing) to form an overall leadership effectiveness score for each PL and PSG observed by an SME. The second set consisted of the following three ratings made at the end of the rotation by the platoon-level observer/controllers (OCs): (1) PSG leadership, (2) PL leadership, and (3) mission accomplishment or performance of the platoon as a unit. While other ratings were made during the rotation, these five were judged to provide sufficient information on NTC performance to identify overall HS-NTC relationships.

Sample and Data Collection Procedures

As described in Rachford et al (1986), SMEs rode with the OCs of platoons and, based on observations of tactical missions, rated the performance of the PLs and PSGs during the NTC rotation. The SMEs were able to rate 15 platoons on at least two missions: 12 mechanized infantry or armor, 2 mortar, and one engineer. The OCs made end-of-rotation ratings on the 24 mechanized infantry or armor platoons in terms of the effectiveness of the leadership of the PL, the leadership of the PSG, and the mission accomplishment of the platoon as a unit. Thus, 12 of the 24 infantry or armor platoons were rated by both an SME and OC; the remaining platoons were rated only by an OC (12 infantry or armor platoons) or only by an SME (the two mortar platoons and the engineer platoon).

The pre-rotation questionnaires (Annexes A-D) were administered three weeks before the rotation. The target personnel were those in positions at company level and below, in all the combat and combat support elements going to the rotation. For this report, results are presented for the 27 platoons for which some observational data were collected at the NTC. The obtained sample sizes/possible sample sizes of responding unit members by position (and questionnaire form) were: SM (380/422); SL (63/69); PSG (24/27); PL (27/27); FSG (8/9); and CO (8/9).

Post-rotation questionnaires (Annex E) were administered three weeks after the rotation. The target post-rotation sample was limited to those in the 27 platoons for which there were some NTC observational data. The obtained sample sizes by position were: SM (192); SL (42); PSG (18); PL (25); FSG (6); and CO (3).

Although HS data were principally collected through questionnaires, interviews with the line battalion commanders were also conducted to get information on general unit practices. These interviews were particularly useful for identifying HS training distractors.

Data Analysis

Description of pre-rotation and post-rotation conditions and changes between these two periods were described at the level of the individual respondent, for example, the bonding of all PSGs sampled to their SMs. Before such analyses were conducted, responses to some questionnaire items were aggregated to form multiple-item scales as measures of the variables of interest. Scores for multiple-item scales were computed for each respondent as the arithmetic mean of the responses to the items that formed the scales. Two heuristics guided the formation of multiple-item scales. One was the source of the items. That is, the questionnaire included items drawn from past research and intended for combination into multiple-item scales based on that research. A second was that items which were constructed to measure the same variable (e.g., a leader competency such as supervision) were grouped to form a scale.

The unit of analysis was the platoon as a unit in analyses that related pre-rotation factors to performance during the NTC rotation. Some of the HS data were already at the platoon level and required no further manipulation. For instance, HS ratings of PLs by PSGs were at the platoon level since there was only one such rating per platoon, and the ratings could be used directly in correlations with platoon performance at the NTC. Variables measured by ratings of SMs and SLs, however, required statistical aggregation into platoon-level measures since several SMs and SLs in each platoon had provided ratings. The approach used was to average such ratings within each platoon. The HS averages were then related to the platoon-level data gathered at the NTC. Ratings made by the PSG and CO were averaged, in some cases, to provide a single measure of the view from the company level.

As with the previous report on this NTC rotation, two variables were described as "related/correlated" or as "different" only when there was a probability of .05 or less that the result occurred by chance. This criterion limits the possibility that the relationships and differences reported were chance, as opposed to true, findings. Because multiple analyses were conducted, however, there still remains some possibility that some reported effects were by chance.

Analysis Interpretation Issues

This analysis of platoon-level leadership provides an extensive amount of information. As will be discussed, consistencies in the data increase the probability that many of the findings would be replicated with research sampling other units and other NTC rotations. Despite this promise, there are several reasons why the results in this report should be considered preliminary and may not apply to the Army at large.

1. The analysis involved platoons drawn from one brigade and participating in one NTC rotation. This limited sample of units and NTC rotations may not be completely representative of the U.S. Army.

2. The effects of some HS factors on NTC performance might only be seen by comparing units larger than platoons, that is, companies, battalions, or even larger units. Identifying such factors would require a data collection plan that permits the sampling, measurement, and comparison of data on these larger units.

3. With the relatively small numbers of platoons in the analyses reported here, it took a fairly strong relationship in the data to pass the statistical criterion of .05. Therefore, some true relationships could have been missed by chance.

4. Most of the platoons in this effort were line platoons. The results reported here should be most representative of such platoons.

RESULTS

The results from the pre-rotation HS questionnaire are presented first to provide a context for examining HS-NTC relationships. Results on the HS-NTC relationships follow. The final sections include post-NTC HS data to examine possible effects of the NTC experience and pre/post rotation changes.

Pre-Rotation Questionnaire Results

Overview

A general overview of the pre-rotation HS findings for the four variable categories of leadership, organizational factors, training, and individual factors is as follows:

1. Perceptions of HS leadership, the organizational factors of bonding and command climate, and the morale of unit soldiers tended to vary by type of respondent. Perceptions were generally positive for those in platoon- or company-level leadership positions. In contrast, SMs gave only slightly positive ratings.

2. There appears to have been an appreciable amount of personnel turbulence as indexed by reported length of time in the present unit.

3. Ratings of training realism and quality were at best slightly positive. Despite this, leaders were positive about their chance for success at the NTC.

Leadership

Unit members expressed their confidence in each other in the event of combat. Leaders within platoons were also directly evaluated on performances reflecting certain leadership competencies.

Confidence in Leaders

Table 1 summarizes unit members' ratings of their confidence in each other in the event of combat (see Annex A for the exact wording of the item). Average rated confidence varied from slightly positive to positive (3.3-4.3). PSGs through COs tended to rate others higher than did their subordinate SMs and SLs. The SMs and SLs rated their PSGs relatively higher than their PLs, perhaps reflecting the greater experience of the PSG and the importance of the PSG and the PSG role at HS.

Table 1

Mean Confidence Ratings (Standard Deviations) Pre-Rotation

Rank of Raters (Sample Sizes)	<u>Rank of Those Rated</u>			
	<u>SM</u>	<u>SL</u>	<u>PSG</u>	<u>PL</u>
SM (380)	*3.3(1.0)	3.4(1.1)	3.6(1.2)	3.3(1.2)
SL (63)	3.8(.8)		4.0(1.0)	3.7(1.2)
PSG (24)	4.1(.4)	4.1(.5)		4.1(.7)
PL (27)	4.2(.6)	4.3(.6)	4.3(.9)	
FS/CO (8 of each)	4.2(.5)	4.2(.5)	4.1(.6)	4.1(.6)

* SMs rated confidence of other soldiers in platoon.

Leadership Competency

Annex A describes the items eliciting ratings of performances reflecting leader competencies. Because of the number of performances rated, it was not practical for each respondent to evaluate leaders at all positions. As Table 2

below indicates, SMs, SLs, and PSGs rated their leader immediately higher in the chain of command. Each PL rated the PSG and each SL in the platoon. The company-level leaders (FSGs and COs) rated each PSG and PL in the company. For each respondent, an overall leadership score for each leader evaluated was calculated by averaging ratings for the specific competency scales, such as supervision.

Table 2 also shows the average ratings of the leadership competency of each type of leader in a platoon. Competency ratings for all leaders tended to fall in the positive direction, with ratings varying from 3.2 to 4.1. The nature of this variation was similar to that just presented for confidence. Higher ranking leaders tended to give higher ratings to other leaders, e.g., ratings by PSG vs. FSG/CO. Moreover, SMs and SLs were more ambivalent about the quality of their leaders, although their ratings remained in the positive direction.

Table 2

Ratings of Leader Competencies Pre-Rotation

<u>Rank of Raters</u> <u>(Sample sizes)</u>	<u>Mean Ratings (Standard Deviations)</u>		
	<u>Rank of Those Rated</u>		
	<u>SL</u>	<u>PSG</u>	<u>PL</u>
SM (380)	3.2(.4)		
SL (63)			3.3(.5)
PSG (24)			3.5(.4)
PL (27)	3.9(.4)	3.8(.6)	
FSG/CO (8 of each)		4.1(.6)	4.0(.6)

Organizational Factors

Bonding

The items measuring two components of cohesion--horizontal and vertical bonding--have been used in past ARI research (e.g., Tremble, Yoest, & Bell, 1984) on cohesion and values (see Annex

B). The items measuring horizontal bonding among SMs were also administered to unit leaders. Leaders' responses to these items were considered to measure their vertical bonding to their SMs. As Annex B describes, SMs responded to additional items that measured their vertical bonding to their leaders.

Table 3 shows mean bonding to SMs, both horizontal bonding among SMs and leaders' bonding to SMs. SMs expressed a moderately positive level of horizontal bonding. Leaders tended to indicate even greater vertical bonding to their SMs, with mean bonding of PSGs to SMs relatively higher than that of SLs or PLs.

Table 3

Bonding with Soldiers Pre-Rotation

<u>Raters*</u>	<u>Mean Bonding (Standard deviations)</u>
SM (Horizontal)	3.5 (.6)
SL (Vertical-Squad)	3.7 (.4)
PSG (Vertical-Platoon)	4.0 (.3)
PL (Vertical-Platoon)	3.8 (.5)

* Sample sizes are shown in Table 2.

Table 4 displays results for SMs' vertical bonding with the leaders in their platoons. In contrast to bonding to or among SMs, the SMs in a platoon did not express a strong level of bonding with their leaders. Vertical bonding was slightly higher with PSGs than PLs, which is consistent with previous results (Table 1) where SMs were slightly more confident in PSGs as combat leaders than PLs.

Table 4

Soldiers (SM) Bonding with Leaders Pre-Rotation

<u>Rank of those Rated</u>	<u>Mean Values (Standard Deviations)</u>
SL *	2.6 (.7)
PSG **	3.1 (.8)
PL **	2.8 (.8)

* SMs in squad did rating.

** SMs in platoon did rating; N = 380 SMs for all ratings.

Command Climate

Items forming scales on the Unit Climate Profile (UCP) (Palmer, Gividen, & Smootz, 1984) were adapted and administered to all unit members. These scales concerned: rewards/corrections, discipline, human relations, freedom from situational harassment, freedom from harassment by leaders, and promotion policies. Also administered was an item (especially constructed for this effort) that elicited perceptions of the "NTC climate" in the unit, that is, whether unit leaders would treat the NTC rotation as a chance for training or as an opportunity for evaluation of individuals.

As Table 5 shows, ratings on the UCP scales ranged from slightly negative to strongly positive (2.6-4.9). This variation was such that responses were generally more positive as rank increased. Indeed, there seem to have been a number of dissatisfied SMs and SLs since their average ratings were barely positive, if not negative, on some scales.

The ratings produced by two UCP scales were consistently low across several ranks. The low ratings indicated dissatisfaction with some of the unit operating procedures reflected in (1) the Freedom from Situational Harassment items and (2) the Promotion Policy item. Examples from the Harassment scale are "rules getting in the way of getting the job done" and "unnecessary hours of extra work" (see also Annex B). The single item for promotion policy asked about satisfaction with the policy. Discussions confirmed that unit members sometimes spent long hours to complete work under tight deadlines. Note also that small unit leaders were possibly not "blamed" for this situational stress since the ratings for items dealing with harassment by leaders produced uniformly more favorable ratings.

Table 5

Command Climate Scales Pre-Rotation

<u>Scales</u>	<u>Mean Values (Standard Deviation)</u>						
	<u>Ranks of Raters</u>						
	<u>SM</u>	<u>SL</u>	<u>PSG</u>	<u>PL</u>	<u>FSG</u>	<u>CO</u>	
Rewards/Corrections	3.0(.8)	3.2(.7)	3.6(.8)	3.5(.3)	4.1	3.7	
Discipline	3.3(.7)	3.2(.9)	3.8(.7)	3.7(.7)	4.4	4.3	
Human (Race) Relations	3.4(.9)	3.7(.9)	4.2(.7)	4.6(.6)	4.7	4.9	
Freedom from Harassment (Situation)	2.6(.7)	2.7(.6)	2.7(.5)	2.9(.7)	3.4	3.9	
Freedom from Harassment (Leaders)	3.3.(1.0)	3.9(.9)	3.8(1.0)	3.6(1.0)			
Promotion Policy	2.6(.9)	3.1(.9)	2.9(1.0)	3.2(1.1)	4.8	4.1	
NTC Climate*	3.3 (1.1)	3.4(1.2)	3.3(1.3)	3.6(.9)	4.1	4.1	

* Only scale not based on Unit Climate Profile.

Responses to the NTC Climate item (Table 5) indicated moderate optimism that the NTC rotation would be used for training (3.3-4.1), as opposed to evaluation. Company-level leaders were particularly optimistic about this issue.

Training/Perceived Readiness

Ratings of Training Realism (Table 6) tended to be in the negative direction for leaders (2.0-2.2), possibly reflecting limitations on the unit in terms of training facilities and time for training. Some of the items referred to difficult to achieve activities such as "realistic simulation of artillery firing effects" and "an OPFOR trained to fight like the Soviets" (see Annex C). Discussions with unit leaders, including the battalion commanders, confirmed that conditions for training at the company level (let alone task-force level) were limited. It should be noted that the ratings indicated that while training with MILES was apparently fairly frequent, using MILES with strict rules of engagement was less frequent.

Ratings of Training Quality, which included evaluation of training from individual through company, ranged from equivocal to positive (2.8-3.9). Even platoon level leaders rated quality at only the 3.3 level.

Most soldiers and leaders apparently did not believe that readiness was given a high priority in their companies. Mean ratings (Table 6) ranged from 2.9-3.3 for ranks of PSG and below, consistent with results from the training realism and quality scales.

Despite the ratings for training and readiness, the SMS and leaders were relatively positive in their predictions about chances of success at the NTC (see Table 6). Average assessments of chances of success ranged from 3.4 to 4.0 and indicated that optimism tended to increase with rank.

Table 6
Training and Readiness Scales Pre-Rotation

Mean Values (Standard Deviations)						
	Rank of Raters					
	<u>SM*</u>	<u>SL</u>	<u>PSG</u>	<u>PL</u>	<u>FSG</u>	<u>CO</u>
Training Realism	3.0(.7)	2.0(.7)	2.2(.7)	2.1(.7)	2.1	2.2
Training Quality	3.1(.8)	2.8(.8)	3.2(.7)	3.3(.8)	3.4	3.9
Priority of Readiness	3.0(1.3)	2.9(1.2)	3.2(1.4)	3.3(1.3)	3.5	4.0
Predicted NTC Performance	3.5(1.0)	3.4(.9)	4.0(.8)	3.8(.7)	3.8	3.9

* For sample sizes see Table 2.

Individual Factors

Annex D presents the questionnaire items measuring individual factors. These items elicited ratings of a unit member's own morale and, for SMs only, of present feelings about Army life and reenlisting in the Army. Demographic items also provided data pertinent to personnel stability.

Table 7 describes results on morale and SMs' feelings about Army life and reenlistment. These results do not suggest a strong commitment to the Army by the average SM. Average scores for morale and feeling about Army life were "borderline", neither positive nor negative. However, about 35% of the SMs reported a high or better morale and feeling for the Army. Feelings of SMs towards reenlistment were similarly borderline, although about 30% indicated positive feelings toward reenlistment. The average morale of SLs was similarly neutral, overall. In contrast, PSGs and above expressed relatively positive levels of morale.

Table 7

Morale and Commitment Pre-Rotation

	<u>Mean Values (Standard Deviations)</u>				
	<u>SM</u>	<u>SL</u>	<u>PSG</u>	<u>PL</u>	<u>FSG/CO</u>
Morale	2.9 (1.1)	3.1 (1.2)	3.5 (1.0)	3.4 (1.1)	4.1
Plan to Reenlist	2.8 (1.4)				
Army Life	3.1 (1.1)				

* For sample sizes see Table 2.

As part of the pre-rotation questionnaire, SMs, SLs, PSGs, and PLs indicated how long they had been in their present company. Table 8 identifies the response options available and the percentages of individuals selecting each option. Based on this table, half or less of all platoon members, except SLs, had been in their present company more than 9 months (SM--38%; SL--60%; PSG--50%; PL--48%). The level of personnel stability within platoons was possibly even less since these figures do not reflect turbulence within companies. In addition, an item on the post-rotation questionnaire indicated that 13.9% of the SMs were fillers just for the NTC rotation.

Table 8

Personnel StabilityTime Spent in Company up to NTC Rotation

<u>Time Interval</u>	<u>Percentage of Personnel</u>			
	<u>SM</u>	<u>SL</u>	<u>PSG</u>	<u>PL</u>
0-3 months before	36.1	11.1	16.7	0
4-6 months before	12.1	19.0	12.5	18.5
7-9 months before	14.2	9.5	20.8	33.3
10-12 months before	11.1	20.6	25.0	18.5
13-18 months before	14.2	25.4	12.5	22.5
19-24 months before	6.6	3.2	4.2	7.4
25-30 months before	4.0	3.2	0	0
31-36 months before	1.6	3.2	4.2	0
Above 36 months before	.3	4.8	4.2	0

Summary of Pre-Rotation Status

Leaders from PSG on up felt positive about their unit in terms of leadership, soldier quality, command climate, and morale. The SMs and SLs tended to give more equivocal ratings (except perhaps for ratings of leadership). The differences in ratings by rank may reflect differences in commitment and involvement by more senior or higher ranking personnel. There were possible indications of pre-rotation problems in the areas of: command climate (especially, situational harassments--workloads and working hours--and concerns with the promotion system), training, and individual factors (morale of SMs and personnel turbulence). It is of interest for the platoon-level focus that subordinates consistently gave PSGs relatively higher ratings than PLs. This pattern is consistent with the standard view of the importance of the PSG's role in garrison and the PSG's greater experience relative to the PL.

Home Station-NTC Relationships

Overview

Statistically significant correlations between pre-rotation HS variables and NTC unit performance and leadership pointed to the importance of:

1. HS leadership of the PSG;
2. The organizational variable of small unit bonding; and
3. The individual factor of personnel turbulence.

A few significant correlations between the command climate scales and NTC performance were also obtained. There were no significant correlations with the measures of training realism and quality.

Leadership

Pre-rotation ratings by CO/FSG and PLs, of PSG HS leadership correlated significantly and positively with the leader performance of PSGs at the NTC (see Table 9). CO/FSG ratings of PSG HS leadership were also related to OC ratings of PL leadership and unit performance at the NTC. In contrast, there were no statistically significant correlations between PL HS leadership and NTC performance. These results indicate the general importance of the PSG to pre-rotation preparation and, furthermore, reinforce the earlier suggestion about the importance of a supportive PL-PSG relationship for the direct leader effectiveness of the PL in the field.

The significant correlations between SMs' confidence in their SLs and SMEs' ratings of PSG and PL leadership at the NTC (see Table 9) may indicate that units with effective NTC leadership had effective leadership over the entire chain.

Organizational Factors--Bonding

The HS bonding of PSGs and PLs with their SMs was significantly and positively correlated with SME ratings of the NTC leadership of both PSGs and PLs (Table 9). The correlation between horizontal bonding among SMs at HS and SME ratings of PL NTC leadership was also significant. In addition, there was a trend between SM horizontal bonding and PSG NTC performance, $p < .09$. These findings together suggest the potential importance to effective leadership performance of the development and exchange of high positive regard both between and among the leaders and the SMs in a platoon.

Table 9

Leadership/Bonding Correlations with NTC Performance

<u>HS Measure</u>	<u>NTC Performance</u>				
	<u>SME RATING</u>		<u>OC RATING</u>		
	<u>PSG</u>	<u>PL</u>	<u>PSG</u>	<u>PL</u>	<u>UNIT</u>
CO/PSG Rating of PSG Competence			.41	.44	.53
PL Rating of PSG Competence			.47		
SM Confidence in SL	.52	.59			
PSG Bonding with SM	.70	.60			
PL Bonding with SM	.51	*			
SM-SM Bonding	**	.54			

*, ** Trends: * = $p < .06$, ** = $p < .09$

Note: Number of platoons is too small to test for differences between correlations, .53 vs .41. The number is 23 platoons for OC ratings and 14 for SME ratings.

There were only two significant HS-NTC correlations with command climate measures. These were the positive correlations between (1) PSG feelings about promotion policy and OC ratings of PL NTC leadership (.41) and (2) PL ratings of the company's methods for rewarding and SME ratings of PL performance (.55). Given the number of possible correlations with climate variable, these results provide only slight evidence of the importance of climate issues for NTC performance. However, the correlation of PSG feelings about promotion policy does add to the pattern of results pointing to the importance of the PSG and/or PSG role.

Individual Factors--Personnel Stability

The PSG's time in the unit prior to the NTC rotation was positively correlated with SME ratings of PSG NTC leadership (.58) and OC ratings of unit performance (.43). In contrast, the PSG's time in service tended to correlate negatively with PSG NTC performance ($r = -.40$, $p < .06$). These results again emphasize the key role of the PSG in NTC preparation.

The correlations between NTC performance and the pre-rotation individual variables of morale and plans for reenlistment were not statistically significant.

Summary HS-NTC Relationships

These results indicate the importance of HS small-unit leadership for NTC, in particular, the importance of the HS leadership of the PSG. Results on issues pertinent to personnel management and their management in units--personnel stability and unit promotion policy-- further highlighted the PSG. Finally, the importance of leaders' regard for their SMS and horizontal bonding among SMS was reaffirmed.

Pre-Post Rotation Changes

Overview

Few significant pre-post differences were obtained when responses to identical pre- and post-questionnaire items were compared. The significant differences indicated that after the NTC rotation, there were changes in (1) confidence in the PSG (leadership), 2) SL-SM bonding (organizational factor), and (3) predictions of success at the NTC (training factor). There were no pre-post changes in any of the individual variables.

Leadership

The post-rotation confidence in the PSG reported by both SLs and PLs was an average of .5 scale units lower than the pre-rotation reports (Table 10). A more detailed examination of PL ratings indicated that while confidence in most PSGs did not change from pre- to post-rotation, a drop in confidence was obtained for 7 PSGs. The drop in confidence in the PSG in some platoons could be a contrast effect associated with relative differences between the field and HS in the prominence of the PSG role. It should be noted that the drop in SL confidence in the PL almost reached statistical significance ($p < .10$).

Table 10

Pre-Post Comparisons in Confidence in Leaders

Rank of Raters (Sample Sizes)	Mean Values Pre/Post NTC			
	<u>Rank of Those Rated</u>			
	<u>SM</u>	<u>SL</u>	<u>PSG</u>	<u>PL</u>
SM (192)	3.3/3.4	3.4/3.4	3.6/3.5	3.3/3.1
SL (42)	3.8/3.8		4.0/3.5*	3.7/3.4**
PSG (18)	4.1/4.3	4.1/4.1		4.1/4.0
PL (25)	4.2/4.0	4.3/4.2	4.2/3.7*	
FSG(6)/CO (3)	4.2/4.3	4.2/4.1	4.1.4.1	4.1/4.1

* $P < .05$; ** $P < .09$

Organizational Factors--Bonding

There was a small increase (.2) in the average bonding of SLs to their SMs after the NTC experience. This increase could indicate that working together during the entire NTC experience led the SLs to feel closer to and have more respect for their SMs. There were no significant changes in the other bonding measures.

Training/Readiness

Ratings of unit training quality did not change after the rotation. However, there was a drop (.3) in the average rating of predicted NTC success, by both the SMs and the PSGs. This drop may represent an increased understanding of what it takes to win at the NTC.

Post NTC Viewpoint

Some items on the post-rotation questionnaire did not have pre-rotation counterparts. These items (see Annex E) produced, first, ratings contrasting leader performance at HS and NTC and, second, views of the NTC as a training experience.

Leadership

There were separate questions to rate the quality of leadership at (1) the NTC and (2) at the HS (Annex E). As Table 11 shows, PSGs rated the leadership performance of their PLs slightly higher at the NTC (4.2) than at the HS (3.8). In contrast, PLs rated PSGs as slightly less effective at the NTC (3.6) than at the HS (3.9). These relative differences in the perceived HS and NTC performance of PSGs and PLs were found only in the ratings made by PLs and PSGs and not in the ratings of other unit members (e.g., SLs). Nevertheless, this pattern is consistent with the concept that the PSG is more in charge in garrison and that the PL is more directly in charge in the field.

Table 11

Ratings of Leaders Effectiveness at HS and NTC

<u>Rank of Rater (Sample Size)</u>		<u>Rank of Those Rated</u>		
		<u>Mean Values at HS/NTC+</u>		
		<u>SL</u>	<u>PSG</u>	<u>PL</u>
SM	(195)	3.5/3.5+	3.6/3.6	3.4/3.4
SL	(44)		3.6/3.5	3.4/3.5
PSG	(22)	3.9/4.2*		3.8/4.2*
PL	(24)	3.9/3.9	3.9/3.6**	

* $P < .05$; ** $P < .06$

+ Separate ratings were made of HS and NTC effectiveness, see Annex E.

Training at the NTC

Those at higher ranks tended to be more positive that NTC training improved their ability to fight in combat (Table 12). These results were consistent with other results suggesting rank differences and may reflect the possibility that NTC affords

better training opportunities for higher-level units and the soldiers in them. It is interesting to contrast these results with those on whether the personnel enjoyed the rotation. Both the training afforded by and enjoyment of the NTC were rated on a five-point scale, anchored from strongly disagree to strongly agree (see Annex E). As table 12 shows, there was relatively more agreement about the value of NTC for training, than that it was an enjoyable experience.

Table 12

Perceived Learning at the NTC

<u>Scales</u>	Mean Values (Standard)					
	<u>Rank of Raters</u>					
	<u>SM</u>	<u>SL</u>	<u>PSG</u>	<u>PL</u>	<u>FS</u>	<u>CO</u>
Learned to Fight	3.3(1.2)	3.6(1.4)	3.8(1.0)	4.2(.8)	4.2	4.7
Enjoyed the Rotation	2.6(1.2)	2.8(1.1)	3.0(1.5)	3.4(1.2)	3.8	4.3

DISCUSSION

The overall relationships found between HS conditions and NTC performance suggest that the research approach used in this effort is on the right track. Variables in three of the HS four categories investigated--leadership, organizational conditions, and individual factors--were found to be related to NTC leader or unit performance. The potential power of a systems approach was also suggested by the convergence of findings from the three categories on a limited number of HS factors, in particular, PSG HS leadership and unit cohesion.

With respect to leadership variables, these results indicate that the quality of small unit leadership, particularly the PSG, is a key to HS preparation for the NTC. Ratings of PSG HS performance were related to both leader and platoon performance at the NTC. In addition, the longer a PSG had been in the unit prior to the rotation, the better was the NTC performance. None of the correlations between PL HS leadership and NTC performance was statistically significant. These results contrast with the relationships between leader and unit effectiveness concurrently

observed during the NTC rotation (Rachford, et al., 1986). Unit performance at the NTC was found to be more directly related to the NTC performance of the PL than the PSG, although evidence suggested the importance of the PL-PSG relationship. The contrasting results for HS and NTC leadership fit the commonly held view that the direct leadership function in a platoon shifts from the PSG to the PL as the platoon transitions from garrison to the field. A noteworthy corollary of this view is that while the criticality of a leadership position may depend on the situation (e.g., field or garrison), the performance of all unit leaders is important over the entire life cycle of the unit.

A HS organizational factor consistently related to NTC performance was platoon cohesion or bonding. Both horizontal bonding and vertical bonding were related positively to NTC performance. These results are probably further evidence for the importance of leadership since the development of unit cohesion is likely dependent on leader actions and policies.

The other organizational variable related to NTC performance also pointed to the PSG: belief about the unit's promotion policy. This was also the case for two individual-level variables: PSG time in platoon and PSG time in the Army. Even though other HS variables in these categories and the training variables were not significantly correlated with NTC performance, this does not necessarily mean that these factors are unimportant for NTC performance. The limitations of the current research project have been outlined, including the small number of platoons observed. With respect to training factors, the questionnaire methodology may not have been sensitive to differences in platoon-level training quality. Observations of the training conducted in a unit would possibly be more revealing. Also, the units had experienced common training distractors that could have prevented or wiped out the effects of differences in platoon training. For command climate, the effects may show up more clearly when larger units, such as companies and battalions, are the focus of research. However, there are not enough of such units in a single rotation to study effects of differences in command climate.

There was a consistent tendency for leaders to give higher ratings than subordinates. While there are probably multiple reasons for these results, one reason may be that leaders actually feel more positive about their units and their roles in their units than do subordinates. However, squad-level leaders usually gave lower ratings than did leaders at higher levels. The lower ratings by SL-level leaders may indicate problems worthy of future investigation. The importance of SL performance was further indicated by the positive correlation between the SMs' confidence in their SLs and NTC performance and by the increase in SL-SM bonding after the NTC rotation.

Some of the key directions for future research include:

1. Confirmation of the present results with respect to platoon level leadership with other units and with a focus to specify the leader behaviors in garrison and in the field that lead to unit success.
2. More focus on other levels of small unit leadership.
3. A wider range of approaches to HS data collection, including observation of field exercises and training.

CONCLUSIONS

ARI's earlier report on relationships among PL, PSG, and unit performance during NTC exercises indicated the importance of both the PL's direct leadership and of a supportive PL-PSG relationship for platoon mission effectiveness. Despite their limitations, the data reported here suggest preliminary conclusions about HS determinants of these relationships. HS determinants appear to consist of some interaction between variables in such areas as leadership, organizational conditions, training, and individuals. This preliminary conclusion emphasizes the importance of a research approach that allows for the identification of this interaction. The results also point to two specific sets of variables as candidate determinants of leader and platoon effectiveness at the NTC. One set involves the PSG: both the quality of the PSG's HS leadership and assignment conditions (length of tenure and opinion about promotion opportunities) that would provide opportunities for quality PSG leader performance. The second set is indicated by results on bonding or cohesion: the development of mutual respect between and among SMs and their leaders prior to the NTC experience.

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Annex A

Pre-Rotation Leadership Factors Scales

PRE-ROTATION LEADERSHIP FACTORS SCALES

The scales in the Leadership section include confidence in effectiveness in combat and multiple item scales on leader competencies.

Confidence in Effectiveness in Combat

There was a single item only. Of course the wording would vary depending on who was being rated:

1. Describe your confidence in your Platoon Sergeant in the event of combat.

Very Low	Low	Borderline	High	Very High
1	2	3	4	5

Leadership Competency Items

Items used by Platoon Leader and Lower Ranks

The items are those used for the rating of PSGs by PLs. Similar items were used by SMs, SLs and PSGs. There were slight wording changes depending on the rank of the rater and the person rated. Items used by the CO/FSG are presented later.

All items used the following rating dimensions.

Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
1	2	3	4	5

1. The Platoon Sergeant provides the platoon with an understanding of the importance of the tasks he assigns.
2. The Platoon Sergeant recognizes and adequately rewards outstanding performance.

3. The Platoon Sergeant performs well in an environment of decentralized execution.
4. The Platoon Sergeant provides the platoon with an understanding of the importance of the Army to the nation.
5. The Platoon Sergeant goes "strictly by the book" in his relationship with me.
6. Describe how willing the Platoon Sergeant is to try different ways of accomplishing his missions, even if it results in honest mistakes.
7. The Platoon Sergeant informs me of changes in the mission.
8. The Platoon Sergeant holds his men accountable for their actions.
9. The Platoon Sergeant is calm and cool under pressure.
10. The Platoon Sergeant tries to take over the responsibilities of his men and do their job.
11. The Platoon Sergeant assigns clear and specific responsibility for accomplishing tasks.
12. The Platoon Sergeant treats his men fairly when they make an honest mistake.
13. The Platoon Sergeant DOES NOT explain things clearly.
14. The Platoon Sergeant is willing to discuss his ideas and suggestions about the job.
15. The Platoon Sergeant expresses his ideas to me.
16. The Platoon Sergeant clearly conveys his intent when issuing an OPORD.
17. The Platoon Sergeant keeps me informed about matters concerning our unit.
18. The information that I receive from the Platoon Sergeant is generally accurate.
19. The Platoon Sergeant communicates effectively on the radio.

20. The Platoon Sergeant encourages his men to ask questions if they do not understand what he says.
21. When conflicts arise among platoon members, the Platoon Sergeant consistently directs what should be done, even if someone loses.
22. The Platoon Sergeant anticipates problems and seeks ways to avoid them.
23. The Platoon Sergeant supports the standards that I establish.
24. The Platoon Sergeant takes ownership of problems within the platoon and works to find solutions.
25. The Platoon Sergeant looks ahead and anticipates requirements for the next mission.
26. When conflicts arise among platoon members, the Platoon Sergeant consistently seeks a win-win solution that leaves everyone satisfied.
27. The Platoon Sergeant DOES NOT plan effectively within the time allotted.
28. During tactical exercises, the Platoon Sergeant issues simple orders.
29. The Platoon Sergeant issues simple orders/instructions in garrison.
30. The Platoon Sergeant establishes priorities for the sequence in which work will be accomplished.
31. The Platoon Sergeant CANNOT develop the plans to accomplish his assigned missions.
32. During tactical exercises, the Platoon Sergeant issues flexible orders.
33. The Platoon Sergeant is good at understanding what I expect of him.
34. The Platoon Sergeant encourages risk taking on the battlefield.
35. The Platoon Sergeant supports risk taking in the performance of normal duties.

36. The Platoon Sergeant DOES NOT encourage independent actions by his subordinates.
37. The Platoon Sergeant exploits battlefield opportunities.
38. The Platoon Sergeant shows a personal commitment to his men, unit and the nation.
39. The Platoon Sergeant demonstrates a high standard of personal integrity.

Leadership Competencies Continued

Items Used by Company Commanders and First Sergeants

The items listed were used to rate Platoon Sergeants. The same items with occasional, slight wording changes were used for rating Platoon Leaders. Separate ratings were done for each PSG or PL in the company.

The same ratings dimensions were used for the items below as were used for the above competency items.

1. This Platoon Sergeant supports the standards I establish.
2. This Platoon Sergeant recognizes and adequately rewards outstanding performance.
3. This Platoon Sergeant holds his men accountable for their actions.
4. This Platoon Sergeant clearly conveys his intent when issuing an OPORD.
5. This Platoon Sergeant encourages his men to ask questions if they do not understand what he meant.
6. This Platoon Sergeant takes ownership of problems within the platoon and works to find solutions.
7. This Platoon Sergeant plans effectively in the time allotted.
8. This Platoon Sergeant establishes priorities for the sequence in which work will be accomplished.
9. This Platoon Sergeant supports risk taking in the performance of normal duties.
10. This Platoon Sergeant shows a personal commitment to his men, unit and nation.
11. This Platoon Sergeant demonstrates a high standard of personal integrity.
12. This Platoon Sergeant is skilled at saying the right things in dealing with personal or disciplinary problems.
13. This Platoon Sergeant knows the difference between leading and too much supervision.

14. This Platoon Sergeant encourages his men to develop their skills through reading, school and other methods.

Annex B

Pre-Rotation Organizational Factors Scales

PRE-ROTATION ORGANIZATIONAL FACTORS SCALES

This section contains scales related to bonding and command climate.

Soldier-Soldier; Leader-Soldier Bonding

Both the soldier-soldier and leader-soldier bonding scales used essentially the same items. When the soldiers rate other soldiers it is considered horizontal bonding; But when the leaders do so it is vertical bonding from the leader's perspective.

1. On the average, how well do the soldiers in your platoon do their jobs?

Very Poorly	Poorly	Borderline	Well	Very Well
1	2	3	4	5

2. How many soldiers in your platoon do you think are good soldiers?

None	Very Few	Some	Most	Almost All
1	2	3	4	5

3. How many of the soldiers in your soldiers really want to do well in training?

None	Very Few	Some	Most	Almost All
1	2	3	4	5

4. How many of the soldiers in your soldiers perform so badly that the platoon might be better off without them?

None	Very Few	Some	Most	Almost All
1	2	3	4	5

5. In my platoon, most of the soldiers care about what happens to each other.

Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree
1	2	3	4	5

6. There is trust between the soldiers in my platoon.

Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree
1	2	3	4	5

7. The soldiers in my platoon make each other feel like doing a good job.

Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree
1	2	3	4	5

8. How well do the soldiers in your platoon work together?

Very Poorly	Poorly	Borderline	Well	Very Well
1	2	3	4	5

Soldier-Leader Bonding

For the items in this scale soldiers can indicate their degree of bonding with their leaders.

1. When I go for help my Platoon Sergeant listens to what I say.

Never	Seldom	Occasionally	Usually	Almost Always
1	2	3	4	5

2. My Platoon Sergeant really understands the soldiers in this platoon.

Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree
1	2	3	4	5

3. When I ask for help in solving a problem my Platoon Sergeant helps out.

Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree
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1	2	3	4	5
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4. When I want to talk, my Platoon Sergeant makes himself available.

Never	Seldom	Occasionally	Usually	Almost Always
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1	2	3	4	5
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5. My Platoon Sergeant makes me feel like a "winner when I do something well.

Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree
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1	2	3	4	5
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6. Overall my Platoon Sergeant does a very good job.

Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree
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1	2	3	4	5
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7. My Platoon Sergeant is such a good soldier, he can show us how to best perform our tasks.

Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree
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1	2	3	4	5
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Command Climate

The items in the following scales are taken from the Unit Climate Profile with the one exception noted.

Selected Unit Climate Profile Items

PROMOTION :

1. Overall, how do you feel about the promotion policy in your company?

Very Satisfied	Dissatisfied	Borderline	Satisfied	Very Satisfied
1	2	3	4	5

REWARDS AND CORRECTIVE ACTIONS:

1. Do soldiers in your company who perform well on the job ever receive praise, recognition or reward?

Very Seldom	Seldom	Sometimes	Often	Very Often
1	2	3	4	5

2. When a soldier in your company makes an honest mistake on the job, is that soldier treated fairly?

Very Seldom	Seldom	Sometimes	Often	Very Often
1	2	3	4	5

3. In your company are corrections for careless or intentional poor performance made fairly?

Very Seldom	Seldom	Sometimes	Often	Very Often
1	2	3	4	5

HUMAN RELATIONS :

1. Do the officers in your company treat the soldiers fairly without regard to race, ethnic background or sex?

Very Seldom	Seldom	Sometimes	Often	Very Often
1	2	3	4	5

2. Do the NCOs in your company treat the soldiers fairly without regard to race, ethnic background or sex?

Very Seldom	Seldom	Sometimes	Often	Very Often
1	2	3	4	5

FREEDOM FROM HARASSMENT :

All the items use the following ratings dimensions.

Very Seldom	Seldom	Sometimes	Often	Very Often
1	2	3	4	5

Note that items that describe a situational factor, as opposed to direct actions of leaders, have an asterisk. *

1. While on the job, do you feel harassed by higher ranking personnel?
- 2.* Does "obeying the rules" ever make it hard to get the job done?
- 3.* Are you made to work unnecessary extra hours?
- 4.* Does "pulling details" seriously interfere with your primary job?
5. While off duty, do you feel harassed by the higher ranking personnel in your company?
- 6.* While off duty, are the soldiers in your company harassed by "mickey Mouse: ("dumb" or unnecessary) company rules?

MILITARY DISCIPLINE :

1. How well are the rules, regulations and policies enforced in your company?

Very Poorly	Poorly	Borderline	Well	Very Well
1	2	3	4	5

2. How well are the rules, regulations and policies obeyed by the soldiers in your company?

Very Poorly	Poorly	Borderline	Well	Very Well
1	2	3	4	5

3. How high are the standards of discipline in your company?

Very Low	Low	Borderline	High	Very High
1	2	3	4	5

4. How do you feel about the standards of discipline in your company?

Very Satisfied	Dissatisfied	Borderline	Satisfied	Very Satisfied
1	2	3	4	5

Annex C

Pre-Rotation Training Factors Scales

PRE-ROTATION TRAINING/READINESS SCALES

There are two Training scales, realism and quality. In addition, there are items related to The Priority Given Readiness and the Predicted Success at the NTC.

Training Realism Scale Items

All items on this scale used the following rating dimension.

- | Very
Infrequently
(0-10%
of time) | Infrequently
(11-25%) | Sometimes
(26-49%) | Frequently
(50-75%) | Very
Frequently
(67-100%) |
|--|--------------------------|-----------------------|------------------------|---------------------------------|
| 1 | 2 | 3 | 4 | 5 |
| 1. | | | | |
| Training as a part of a Combined Arms Team, that is with Armor, Infantry, Artillery, Army aviation, and Engineer etc. | | | | |
| 2. | | | | |
| Training against a live enemy or OPFOR. | | | | |
| 3. | | | | |
| Training against a live enemy that has been trained to fight like Soviet or Russian units would fight. | | | | |
| 4. | | | | |
| Training against a live enemy when officers and NCOs from other units are evaluating and controlling (as Observer Controllers) during the training exercise. | | | | |
| 5. | | | | |
| Training with MILES equipment. | | | | |
| 6. | | | | |
| Training with MILES equipment when you have to play by strict rules of engagement. | | | | |
| 7. | | | | |
| Training exercises where all elements of the unit get to fire live ammunition (i. e. live fire exercises). | | | | |
| 8. | | | | |
| Training when there realistic simulation of mortar firing effects. | | | | |
| 9. | | | | |
| Training when there is realistic simulation of artillery firing effects. | | | | |
| 10. | | | | |
| Training when there is realistic employment of nuclear, biological, and chemical (NBC) activities. | | | | |

11. Training when there is realistic employment of Army aviation elements (helicopters).
12. Training where there is realistic employment of close air support from Air Force aircraft.
13. Training when there is realistic employment of air defense artillery (ADA) units.
14. Training when there is realistic simulation of mines and demolitions.
15. Training when there is realistic simulation of logistical resupply requirements (ammo, fuel, barrier materials, etc.)
16. Training when there is realistic simulation of friendly casualties.
17. Training when there is realistic simulation of enemy casualties and prisoners.
18. Training when there is realistic employment of smoke to cover movement.
19. Training when there is realistic simulation of enemy electronic interference (jamming) capability.
20. Training according to what the training schedule indicates; that is how frequently does your unit do what the weekly schedule says you are supposed to be doing.

Training Quality

All the items for this scale used the following rating dimension.

Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree
1	2	3	4	5

1. Describe the overall quality of training received by the soldiers in your unit.
2. Describe the quality of crew/squad-level training in your unit.
3. Describe the quality of platoon-level training in your unit.
4. Describe the quality of company-level training in your unit.
5. Describe the quality of battalion-level in your unit.

Priority of Readiness

1. Combat readiness is given enough importance in my company.

Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree
1	2	3	4	5

Predicted NTC Performance

1. At this point in time how would assess your unit's ability to fight and win at the NTC?

Absolutely No Chance Of Winning	No Chance Of Winning	Have a 50/50 Chance Of Winning	Would Probably Win	Would Definitely Win
1	2	3	4	5

Annex D

Pre-Rotation Individual Factors Scales

PRE-ROTATION INDIVIDUAL FACTORS

There were very few individual factors scales. In fact the factor of self reported morale was the only individual factor in the questionnaires for all ranks. There were two other related items on the squad member questionnaire, as shown below.

Personal Morale

1. How would you describe the level of your morale lately?

Very Low	Low	Borderline	High	Very High
1	2	3	4	5

Army life

1. Overall, how do you feel at this time about Army life?

Dislike A Lot	Dislike	Borderline	Like	Like A Lot
1	2	3	4	5

Reenlistment

1. How do you feel at this time about reenlisting in the Army?

Strongly Against	Somewhat Against	Borderline	Somewhat For	Strongly For
1	2	3	4	5

Annex E

Post-Rotation Questionnaire Scales

POST ROTATION QUESTIONNAIRE SCALES

The scale items listed below were on the post rotation questionnaire but not the pre-rotation questionnaires. Note that some of the items listed earlier in the Annex under the pre-rotation sections were on both the pre and post-rotation questionnaires, e. g. the "confidence in effectiveness in combat items".

Leader Effectiveness at Home Station/NTC

The two items below gave the respondents a chance to rate leaders at the NTC and at Home Station, providing a comparison.

1. Overall how well did the Platoon Sergeant perform as a leader at your installation before the NTC rotation.

Very Poorly	Poorly	Average	Well	Very Well
1	2	3	4	5

2. Overall how well did the Platoon Sergeant perform as a leader at the NTC.

Very Poorly	Poorly	Average	Well	Very Well
1	2	3	4	5

View of the NTC Experience

1. I learned a lot about fighting in battle at the NTC.

Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree
1	2	3	4	5

2. I enjoyed being on the NTC rotation.

Strongly Disagree	Disagree	Neither Agree Nor Disagree	Agree	Strongly Agree
1	2	3	4	5